MLT FX
User Guide

This manual is revision C

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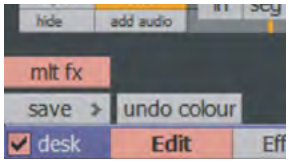
Overview

Interface

This document describes the processes within MLT FX. For general editing techniques and details of how to use the multilayer timeline, refer to the Timeline Editing User Guide.

The **mlt fx** menu within the Edit application allows processes to be easily applied to individual clip segments, video tracks or the whole multilayer timeline.



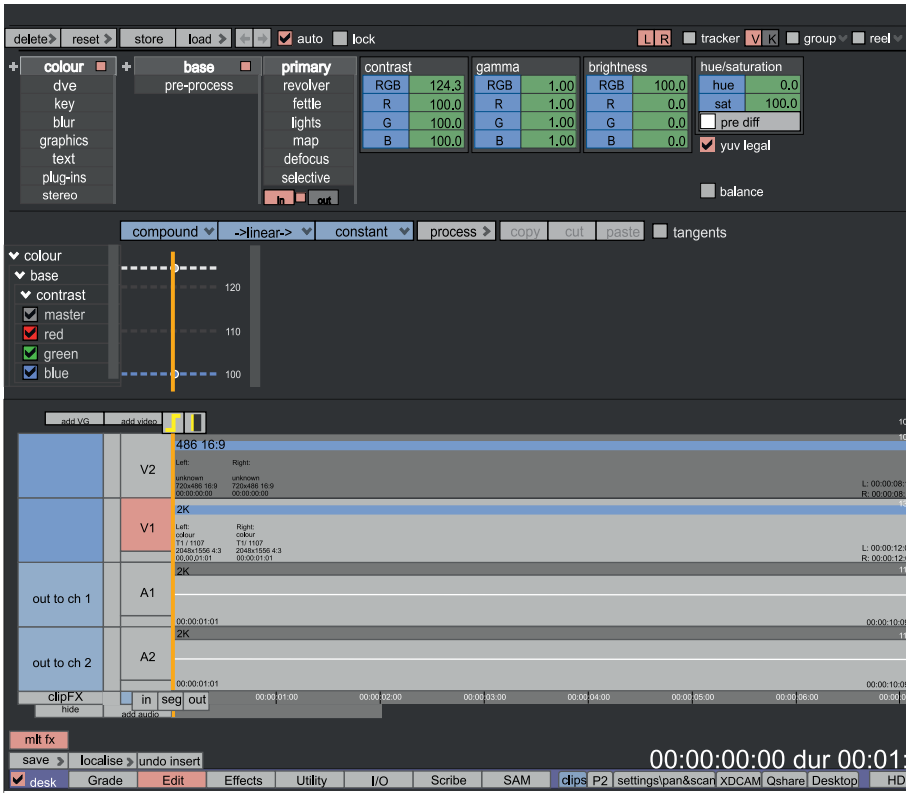
Press the **mlt fx** box in the bottom-left of the Edit menu area, and processes display in the column on the left of the menu area above the timeline.

Processes include: **colour, dve**, **key**, **blur**, **graphics**, **text, plug-ins** and **stereo**.

This user guide does not cover the stereo and colour processes. See Stereo 3D User Guide and Grading User Guide for details.

Menu Display

MLT FX process menus display in a stack above the timeline and keyframe graph area (if the graph is expanded). The **delete, reset, store, load** and render format controls display above the menu area.



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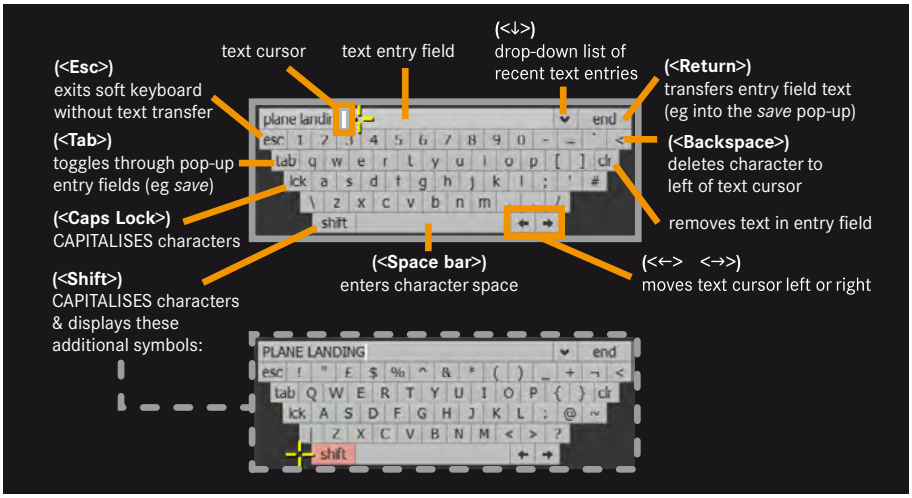
Basic Menu Functions

When a GUI menu function is referred to in this guide, it is **emboldened** to distinguish it from descriptive text. To select a menu function press on its box with the cursor. Boxes are coloured to indicate function type and status, as follows:

pink — Pink boxes indicate enabled or selected functions. Pink boxes toggle to grey when disabled or unselected.

dark grey — Dark grey boxes indicate that the function is available but requires a video or key channel.

light grey — Light grey boxes indicate disabled or unselected functions. Most of these boxes toggle to pink. Light grey is also used in blank fields that require text entry such as a name or category (eg the **save** pop-up). When a field is pressed, a soft keyboard displays allowing text to be entered. The following diagram shows the soft keyboard functions with corresponding external keyboard functions in brackets.



orange — Orange boxes indicate that an operation has been aborted for the indicated reason, or also as a reminder to undertake an action, eg to perform a render or add a keyframe.

dark blue — Dark blue boxes contain information that cannot be changed such as a function name or description.

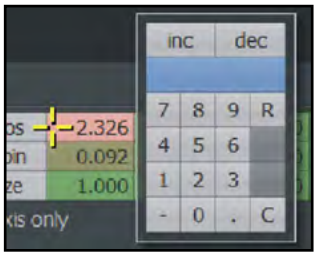
light blue — Light blue boxes provide scroll lists containing alternative selections. Press down and hold on the box with the cursor and while continuing to hold, move up or down the list until the required item is highlighted. Release pressure to select the item.

green — Green boxes indicate that a numeric value can be changed. If pressed, the box becomes pink and a numeric pop-up displays.

olive green — When a change has been entered to a green numeric box, the box turns olive green to indicate that the default value has been changed.

Numeric values can be changed by doing one of the following:

- Use the cursor to press the **inc** and **dec** boxes or numbers on the pop-up. The new value displays in the blue box at the top of the pop-up. Tap on this box to transfer the value, then tap on it again to close the pop-up (or press <Return> on the external keyboard). If required, press the **C** box to clear the value, or the **R** box to reset the green numeric box to its default value.



- Enter a number on the external keyboard then press <Return> to transfer the value and close the pop-up.
- Press and drag the cursor in a clockwise circular movement over a green numeric box to increase the value or an anti-clockwise movement to decrease it. Alternatively, drag up or down to increase or decrease the value.

Specific numeric values can be entered using the following external keyboard shortcuts:

<B>	inserts the biggest allowed value for the selected parameter
<S>	inserts the smallest allowed value for the selected parameter
<D>	inserts the default value for the selected parameter
<Space>	inserts a zero value into the selected parameter (as long as zero is a valid value for the parameter, otherwise pressing the space has no effect)

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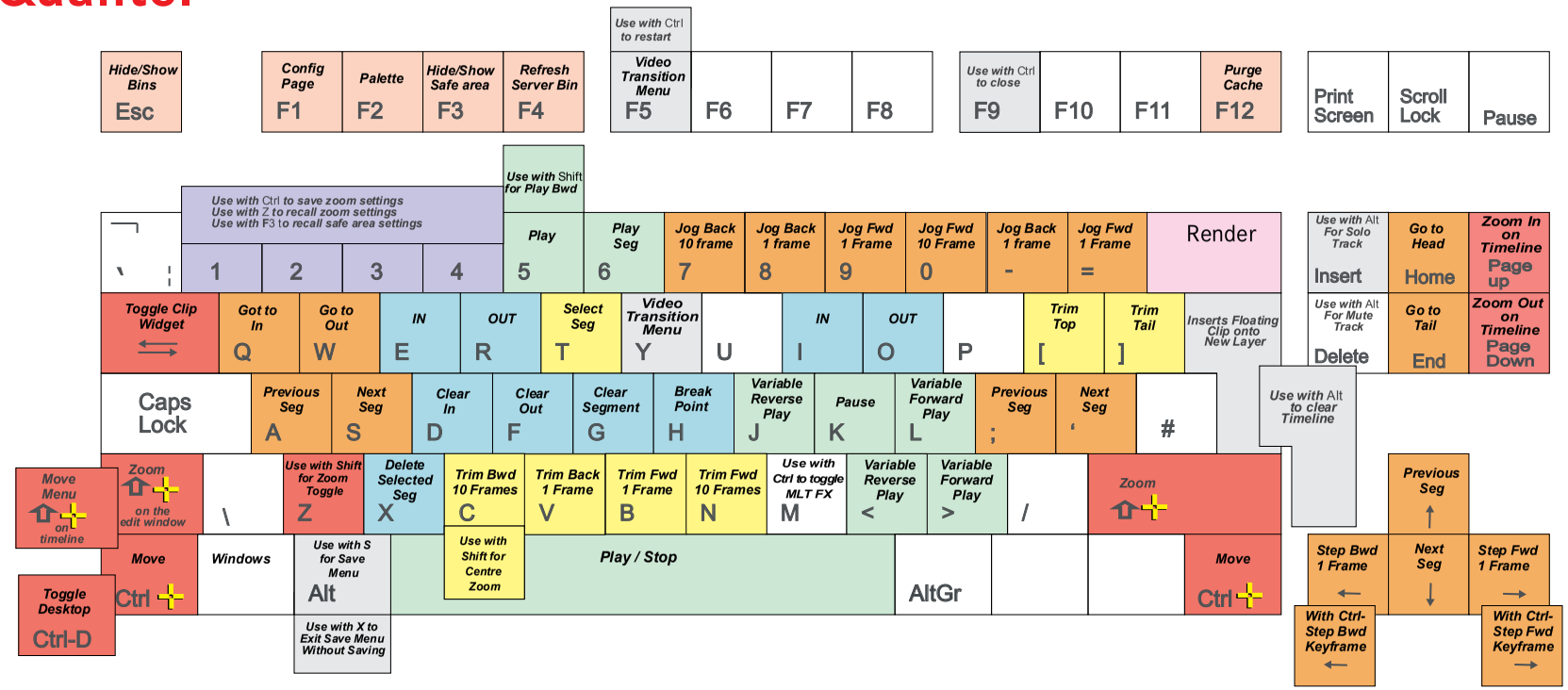

Keyboard Shortcuts

- **Ctrl+Z** undo
- **Ctrl+R** redo
- **Ctrl+Shift+Home** default layout
- **Ctrl+Shift+T** Server Bin clip name pop-up
- **Ctrl+Shift+S** select Server Bin 'areas' box
- **Ctrl+Shift+B** focus on Server Bin
- **Ctrl+Shift+F** focus on Edit timeline
- **Ctrl+Return** show Server Bin clip docked to Edit Window
- **Ctrl+Shift+Return** show Server Bin clip docked to Edit Window with history

- **Windows+D** Windows desktop
- **Alt+Tab** scroll through Windows applications
- **Alt+S** save clip (or segment) in the Clips Bin
- **Alt+Return** single/double clear timeline
- **Alt+Insert** solo top-most selected video and audio track

- **Shift+** ↓ or ↑ adjust audio level on segment
- **Ctrl+Shift+** ↓ or ↑ adjust audio level on all segments in track
- **Ctrl+** ↓ or ↑ move Server Bin clip selector
- **Alt+** ← or → bwd/fwd bin focus in nested bins

Note that these are commonly used shortcuts: for a complete list of shortcuts see the MLT FX and/or Editing User Guides.

MLT FX keyboard map

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Configuration Window

<F1>	opens/closes the Configuration Window.

Layout

<F3>	displays/hides the safe area (ie orange outlines) in the Edit Window.
<Ctrl>+<⇧>+<Home>	switches to 'default layout', which forces the following actions: **launch Edit application; clear timeline; close MLT FX; delete all Floating Clips; remove copies of Server Bin (but not original); dock Server Bin with Clips Bin; focus on Server Bin; move bins to top-left of desktop and resize to 35% of screen width; change bin view to 'title' (ie not 'browse'); clear clips docked to Edit Window**.
<Z>+<⇧>	toggles zoom levels.
<1>, <2>, <3>, <4>	use with <Ctrl> to save zoom settings, use with <Z> to recall zoom settings and use with <F3> to recall safe area settings.

Editing

<Tab>	toggles focus between the timeline and the Floating Clip.
<Ctrl>+<⇧>+<F>	switches focus to timeline.
<Alt>+<Return>	performs single clear of timeline: press twice to double clear the timeline (ie resets timeline horizontal/vertical scale, number of tracks and default frame rate as set in the <F1> Configuration Windows **Fps** drop-down).
<Return>	if a Floating Clip or Clips Bin clip is selected, pressing this key (press twice for Clips Bin clip) places the clip on the timeline at the current timeline cursor position overwriting any overlapping media. If **insert** is ticked (or the <Insert> key pressed), the existing media is split and moves along the timeline accordingly (referred to as 'insert edit'). If **sync** is ticked, a Floating Clip can be placed onto the timeline with its cursor point matching the cursor point on the timeline clip
<Ctrl>+<Return>	performs an 'insert edit' regardless of whether the **insert** function is enabled or disabled (see previous <Return> shortcut).
<H>	inserts a break point at the current timeline cursor position.
<Q>	jumps to the currently selected in point.
<W>	jumps to the currently selected out point.
<E>, <I>	marks an in point at the current timeline cursor position.
<R>, <O>	marks an out point at the current timeline cursor position.
<T>	marks the current segment selected by the current timeline cursor position.
<D>	clears the currently assigned in point.
<F>	clears the currently assigned out point.
<G>	clears the currently selected segment.

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<P>	extends the end of a clip segment from its current position to the current timeline cursor position.
<C>	placing the timeline cursor on an edit point then pressing this key trims back 10 frames from this edit point. If the timeline cursor is placed elsewhere, pressing this key moves the edit point to the current timeline cursor position and trims from there.
<V>	placing the timeline cursor on an edit point then pressing this key trims back one frame from this edit point. If the timeline cursor is placed elsewhere, pressing this key moves the edit point to the current timeline cursor position and trims from there.
<B>	placing the timeline cursor on an edit point then pressing this key trims forward one frame from this edit point. If the timeline cursor is placed elsewhere, pressing this key moves the edit point to the current timeline cursor position and trims from there.
<N>	placing the timeline cursor on an edit point then pressing this key trims forward 10 frames from this edit point. If the timeline cursor is placed elsewhere, pressing this key moves the edit point to the current timeline cursor position and trims from there.
< [>	placing the timeline cursor after an edit point then pressing this key trims (ie 'tops') the start of the clip segment to the current frame.
<] >	placing the timeline cursor before an edit point then pressing this key trims (ie 'tails') the end of the clip segment to the current frame.
<F2>	displays/hides the paint palette which allows colours to be selected and mixed.
<F5>, <Y>	displays the Video Transition Menu that allows a cut, dissolve, wipe or custom transition to be selected. The actual settings used for the wipe, dissolve or custom transition (eg a wipe shape and its position about the edit point) are those previously set in the Trim/Transition Window; but these can be changed as required.
<Alt>+<Insert>	soloes the upper selected video and audio track.
<Alt>+<Delete>	mutes/unmutes selected video and audio tracks.
<Alt>+<S>	opens the timeline **save** pop-up: press twice to save current clip to Clips Bin.
<Alt>+<T>	toggles between **save** pop-up's **clip** and **storyboard** boxes.
<Alt>+<X>	closes the **save** pop-up without saving the clip.

Audio

<Alt>+<1>	toggles the audio track filter (A1) on/off.
<Alt>+<2>	toggles the audio track filter (A2) on/off.
<Alt>+<3>	toggles the audio track filter (A3) on/off.
<Alt>+<4>	toggles the audio track filter (A4) on/off.

<⇧>+<↑>	increases audio level on selected segment.
<Ctrl>+<⇧>+<↑>	increases audio level on all segments in the track.
<⇧>+<↓>	decreases audio level on selected segment.
<Ctrl>+<⇧>+<↓>	decreases audio level on all segments in the track.
<Alt>+<Insert>	soloes the upper selected video and audio track.
<Alt>+<Delete>	mutes/un-mutes selected video and audio tracks.

Navigation and Play-back

<Space Bar>	starts/stops playing the clip edit currently on the timeline.
<→>	steps the current frame position on the timeline clip forwards one frame.
<←>	steps the current frame on the timeline clip backwards one frame.
<↓>, <S>, < ' >	steps the current frame on the timeline to the next edit point (or next logged event).
<↑> ,<A>, < ; >	steps the current frame on the timeline to the previous edit point (or previous logged event).
<J>, < , >	plays the clip backwards from the current frame on the timeline. Repeated presses increase the speed by 1, 2, 4, 8, 16 or 32 frames.
<K>	pauses the playing clip.
<L>, < . >	plays the clip forwards from the current frame on the timeline. Repeated presses increase the speed by 1, 2, 4, 8, 16 or 32 frames.
<5>	plays the clip forwards at normal speed.
<6>	plays the clip forwards at normal speed from the currently selected in point to the currently selected out point.
<7>	jogs backwards 10 frames through the clip from the current frame on the timeline.
<8>	jogs backwards one frame through the clip from the current frame on the timeline.
<9>	jogs forwards one frame through the clip from the current frame on the timeline.
<0>	jogs forwards 10 frames through the clip from the current frame on the timeline.
<Home>	jumps to the first frame on the timeline.
<Page Up>	zooms-in on the timeline around the current frame. Repeated presses increase the zoom.
<End>	jumps to the last frame on the timeline.
<Page Down>	zooms-out on the timeline around the current frame. Repeated presses decrease the zoom.

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Undo and Redo

<Ctrl>+<Z>	undoes the last operation.
<Ctrl>+<R>	re-performs the last operation that was undone.

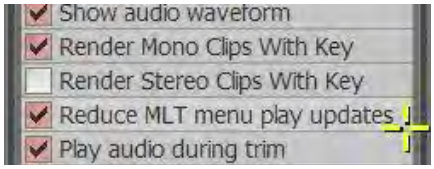
Bins

<Alt>+<←>	moves focus left on nested Clips/Server Bins.
<Alt>+<→>	moves focus right on nested Clips/Server Bins.
<Esc>	hides/shows all open media bins on the desktop.
<F4>	refreshes the Server Bin.
<Ctrl>+<↑>, <↓>	moves Server Bin clip selector.
<Ctrl>+<⇧>+<B>	switches focus to Server Bin.
<Ctrl>+<⇧>+<S>	selects Server Bin 'Areas' scroll box.
<Ctrl>+<⇧>+<T>	shows Server Bin clip naming pop-up (ie soft keyboard).
<Ctrl>+<Return>	shows selected Server Bin clip docked to Edit Window.
<Ctrl>+<⇧>+<Return>	shows Server Bin clip docked to Edit Window with history.

Play-back

MLT FX has a player that allows real-time play-back of processes. The level of performance is determined by the number of Media Engines available on the platform. If the effects or number of layers become too great, the clip simply plays more slowly.

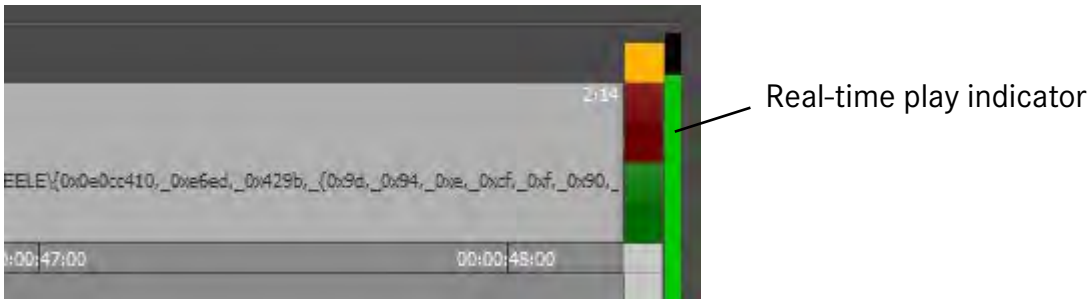
The player can play unrendered material smoothly backwards or forwards in MLT FX. Associated audio is played, even on unrendered segments.



Select **Reduce MLT menu play updates** from the <F1> Configuration Window option to improve player performance with unrendered effects. This prevents any updates when playing in MLT FX, for example, keyframe parameters changing and processes updating across edit points.

Resolutions above 2K are not supported for real-time preview and must be rendered first. This does not apply to soft-mounted RED media that may be 4K. In this case the **Red preview** mode in the <F1> Configuration Window is used.

On the very right of the timeline is a real-time play indicator. When playing a clip it indicates whether the current playback is in real-time or, due to a reduced number of frames being buffered, is approaching a play-back speed that is not real-time. This is especially useful when playing back unrendered material.



The following table gives details of the different colours that the indicator can be.

Colour	Number of frames buffered	Play-back
Green	>50% of maximum	Real-time
Orange	<=50% of maximum and >5% (first indication that fewer buffered frames are available)	Real-time
Red/Orange	<=5 frames and >1 frame (barely any frames are buffered, so approaching a time when play-back speed is not in real-time)	Real-time
Red	<=1 frame or <=5% of maximum (insufficient buffered frames to maintain real-time play-back)	Not real-time

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Rendering

Make a Playable Clip

When to Render Clips

When an edit is assembled on a video track on the timeline, no new video frames are created. This means that the edit plays-back smoothly without the need to render it to make it 'playable'. However, if one of the following is performed on a clip segment, new frames must then be created by pressing the **render** function in order to make the clip playable:

- Create a video transition between two segments.
- Create an MLT FX (or Effects) process on a segment.
- Create a Quantel template (see 'Templating').
- Publish a segment to an sQ Server (see 'Publishing').
- Stretch video via the Floating Clip or timeline **video stretch** function. The **render** function for this is on the associated pop-up, not the timeline.

Segments that need rendering are indicated by a different colour on the timeline. The colour depends on the history of the clip.

See "Timeline Clip Segment Display" on page 1-14.

How to Render

When rendering is required, the small box on the top-right of the timeline (above the red and green solo and mute buttons) turns orange, as shown in the following screen shot.

Press this orange box to render all unrendered segments (press this together with <Ctrl> to render mixed formats); a progress bar displays above the clip segments being rendered.

Auto Render

To render 'simple' transitions automatically, select **UI – Auto Render** in the <F1> Configuration Window.

A 'simple' transition is defined as follows:

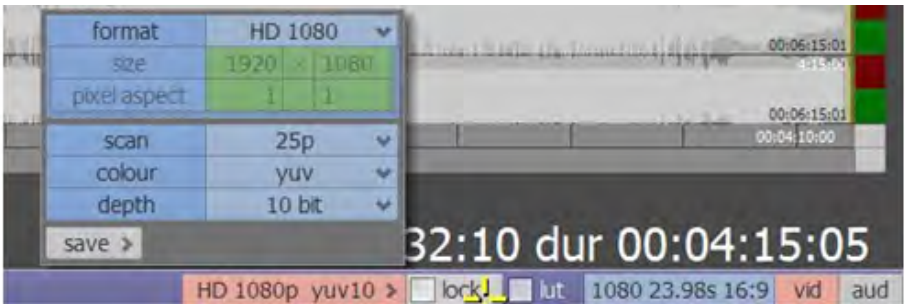
- It does not overlap an unrendered **segment** containing MLT FX, ie 'Seg FX'. If the segment 'effect' has been rendered, it becomes 'simple' and renders.
- It is not within a rendered or unrendered **track** containing MLT FX, ie 'Track FX'.
- It is not within a rendered or unrendered **clip** containing MLT FX, ie 'Clip FX'.

MLT FX Render Format (Mixed Resolution)

An edit consisting of the same video format is rendered at the native resolution. When there are mixed resolution clips, transitions, fades, or an MLT FX **dve** or **stereo** process applied, the orange render box displays with a red outline indicating a render mis-match. Choose the output format for the mixed frames to render to.

To set the render format:

1 Press the video format box on the bottom-right of the Application Bar. This opens a pop-up.



2 Select the required format from the blue scroll box to the right of **format**.

3 Specify other settings in the pop-up, if required. Set the parameters in the render format pop-up to match the required video format for the final clip:

format specifies the generic video format: eg SD 576 4:3, SD 576 16:9, SD 486 4:3, SD 486 16:9, HD 720, HD 1080, 2K 1556, custom.

size/pixel aspect only adjustable if **custom** format is selected

scan specifies either **interlaced** or **progressive**.

colour specifies the colour space of the rendered material.

depth specifies the bit-depth of the rendered material.

4 Press **save**.

The render format can be locked to the current video format setting by ticking the **lock** tick box.

Soft Mounted Media

Soft mounted media can be edited in the same way as any other media, except that it is at preview resolution and not the full render/localise resolution. If soft mounted media is rendered, only the rendered frames are written to the local workspace.

To re-edit the media or access its history, the original media needs to be available online or the original rushes localised first.

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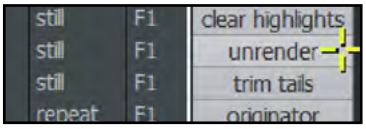
Unrender MLT FX via Clips Bin

Rendered MLT FX history can be unrendered from the Clips Bin.



This is useful for reducing the size of archives so that only the original media with its MLT FX metadata is stored; therefore saving disk space.

To unrender history from the Clips Bin:

1. Open the Clips Bin and select the clip to change.
2. Press on the clip name to open the entry options menu.
3. Press **unrender** and then **confirm**.

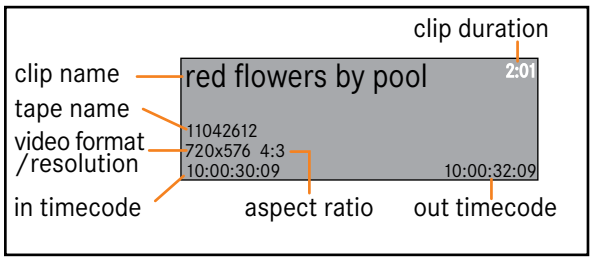
See 'Flat Timeline – Rendering' in the Timeline Editing User Guide for more details of render format controls and rendering.

Render on Export

MLT FX effects can be rendered as part of the export process, saving time and disk space.

See 'Export - Render on Export' in the I/O User Guide for details.

Timeline Clip Segment Display

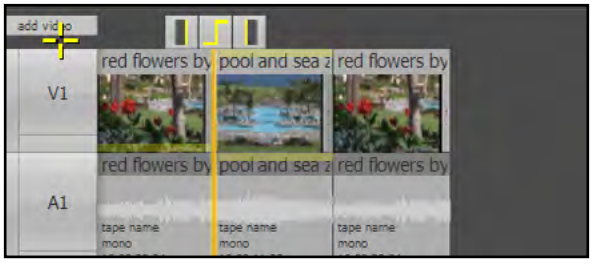


When the vertical scale is sufficient, each video and audio segment includes specific information about the segment's origin.

Audio segments also indicate audio content (ie mono, stereo, quad etc as defined at recording).

To display the file name and path on the timeline for any file based material tick the File name box in the Clips menu of the <F1> Configuration Window.

Enable Segment Thumbnails



Tick **Show pics** in the <F1> Configuration Window's **Editor** menu to display a thumbnail frame on each segment. This is dependent on there being sufficient vertical scale on the track.

Colours/Highlights

Segment colours on the Edit timeline's video layers indicate useful information including where the segment originated and any associated history, eg a process change in Effects or MLT FX. When rendering is required, an orange bar displays in the dark grey area above the clip segment.

SEGMENT — segment with unrendered multiple layer **Effects** history.

SEGMENT — segment with rendered multiple layer **Effects** history.

SEGMENT — multilayer server-held segment that is subsequently viewed on non-MLT seat (eg sQ Cut).

SEGMENT — unrendered **Effects** template has been applied.

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rendered **Effects** template has been applied.

segment with unrendered single layer **Effects** history.

segment with rendered single layer **Effects** history.

unrendered segment with **MLT FX** history.

rendered segment with **MLT FX** history.

segment containing input key created using **dve, key**, third party graphics template option, or other plugins.

soft-mounted/remotely held media segment and/or sQ Server held segment (on sQ Server systems the soft-mount indication can be disabled via the **Remote Media Indicator** box in the <F1> Configuration Window's **Clips** menu; this indicator then only displays for sQ Server held segments).

soft-mounted segment with unrendered single layer **Effects** history.

unrendered soft-mounted segment with **MLT FX** history.

unrendered segment being edited using the <F8> or 'One Shot' menu.

segment that has been stretched then rendered using the **video stretch** pop-up.

segment that is part of an **MLT FX** group.

stereo 3D segment.

Video/Key Controls

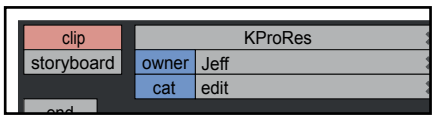
Clip segments with associated keys are shown on the timeline with a red bar.The **V** and **K** boxes in the top-right of the menu area control whether a video or key channel is rendered.

If the **K** box is dark grey, this indicates that there is no key channel on the currently selected clip segment.

With Preview clip with key selected under the System menu (in the <F1> Configuration Window) any clip with an associated key that is unrendered previews on the desktop only. Deselect this option to play without stuttering, showing just the fill video and not the combine.

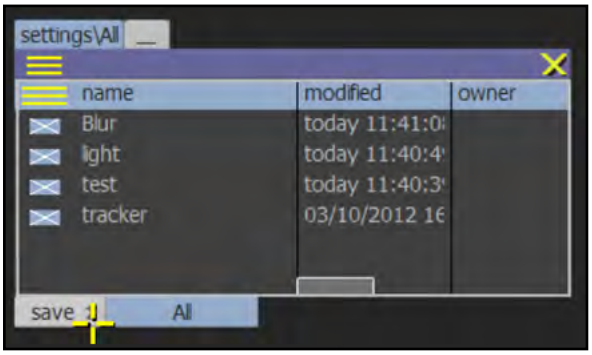
Save

The contents of the timeline (including any processes) can be saved in the Clips Bin by pressing the **save** box in the bottom-left corner of the menu area.



A pop-up displays allowing the title, owner and category to be entered for the edit.

Press the **end** box to action the save or re-select the **save** box to close the pop-up without actioning the save.



To save processes or transitions without the associated media, use the Settings Bin to save and apply settings to future projects.

See the Media Bins User Guide for more information about using the Settings Bin.

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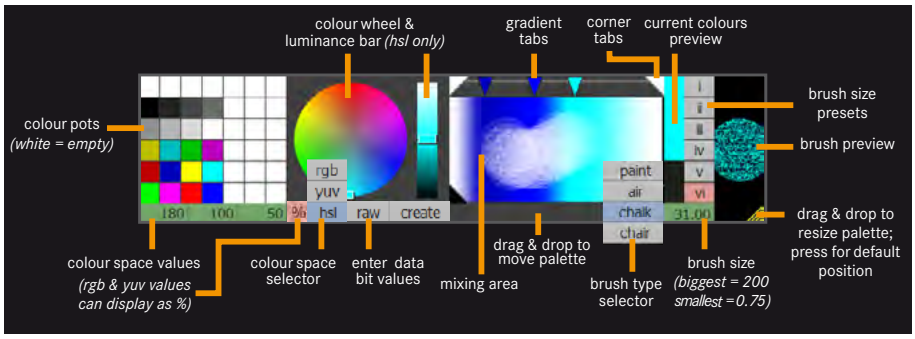
Colour Palette

Colour Process

See the Grading User Guide for more information about using the Colour process.

Access the Colour Palette

Press <F2> on the keyboard to toggle the Colour Palette on and off. Alternatively, in the <F1> Configuration Window's **UI** menu, tick **Palette Swipe** to toggle the palette whenever the pen is swiped down or across the tablet.



The palette enables colours to be created and transferred to colour pots in processes such as **text** or **graphics**. Mixed colours can be stored in the palette and saved. The palette may display extra functions depending on the current process; these are noted throughout this section.

Create and Mix Colours

There are many different ways to create colours; each is described in the following sections.

Brushes

- Choose a brush from the scroll box displaying **paint**, **air**, **chalk** and **chair** (chalk-airbrush). For mixing, the **chalk** and **chair** brushes provide the best results when overlapping colours.
- Change the brush size by tapping on a preset, or entering a numeric value. The brush preview displays the new brush.
- Tap on the required colour pot and paint a line in the mixing area to the right, then tap on another colour and paint another line slightly overlapping the first; new tones display in the areas of overlap. Repeat this with more colours, if necessary.

Graduated Colours

As well as mixing by using brushes, subtle tones can be selected from graduated colours.

- Select a colour pot then press and hold on one of the four corner tabs surrounding the mixing area (these are white and black by default). The colour now displays in the tab and the mixing area; repeat for the other three tabs to create a four-colour ramp effect.
- To introduce colours on a linear gradient, select a colour pot then press on the grey line above the mixing area. A tab displays indicating the colour and its position in the mixing area. Move this tab, and the position of the colour moves with it. Repeat this process adding new colours and tabs as necessary.
- To delete a colour, select the tab and drag it down into the mixing area.

Numeric Values

In some processes such as **text, graphics** and **colour**, a colour can be selected from a pot or the mixing area then the numeric values in the green boxes can be changed. Hold down on a colour pot in the palette or tap a pot in the process menu area to transfer it.

Colour Spaces

In HSL mode, the colour wheel displays (see previous diagram) with a small square cursor to enable colour and hue selection. The slider to the right controls the luminance (brightness) of the colour.

The blue scroll box at the bottom of the palette allows working colour space values to be entered as either **rgb** (red, green, blue), **yuv** (luminance, blue-luminance, red-luminance), or **hsl** (hue, saturation, luminance).

When enabled, the **%** box that displays in YUV and RGB modes allows colours to be defined as percentage values and when disabled, colours are defined as actual data bit values (eg with 8-bit RGB the 100% value is 255, 255, 255).

The **raw** box allows colours to be entered as actual data bit values of the native colour space.

Use Image Area Colours

If the **create** box is enabled, a rectangle lasso displays. Position the rectangle over the image area, and click on the image inside the lasso area to copy that portion of the image the palette mixing area. These image colours can then be selected and changed like any other palette colour.

In some processes such as **text, graphics** and **colour**, an image colour can be transferred to the palette by enabling the **pick** box that displays in the top-right of the palette. Press on an image colour and now paint it in the palette or store it in a pot.

When entering numeric values or mixing colour spaces, it is possible to create illegal colours that must not be transmitted. These include negative values of RGB, zero values of U or V, and saturated colours on very low or peak luminance levels. If an illegal colour is detected or created, the raw box turns orange as a warning.

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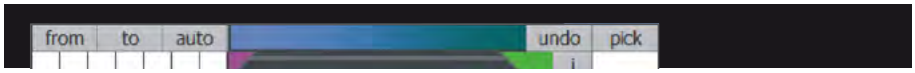
Store and Transfer Colours

Select a colour from a palette pot or the mixing area.

To store a new colour in the palette, press and hold on an empty (ie white) pot. On cursor release, the colour displays in the pot.

To transfer a new colour to a process function (eg **graphics**), tap on the required pot in the process menu area.

Colour an Image

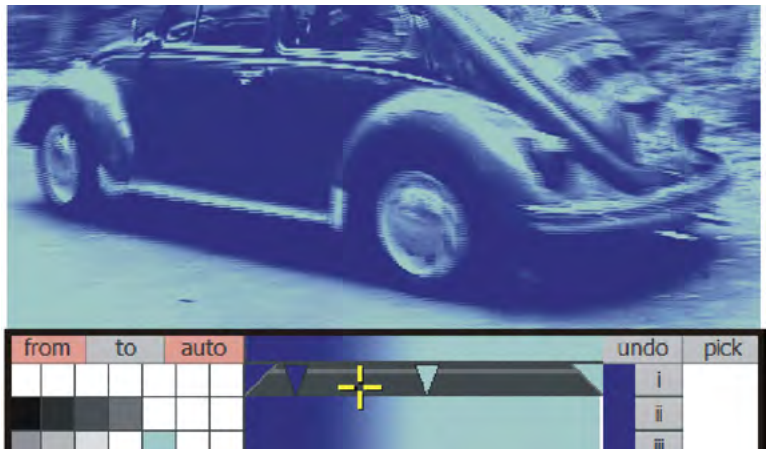


In the **colour** process, the **from, to** and **auto** functions display, as well as an **undo** function on the right.

The **from** and **to** functions allow the image to be modified by the contents of the palette mixing area. The left side of the mixing area affects the lowlights of the image and the right side affects the highlights:

1. From any function in the **colour** menu, create a two-colour graduation in the palette by dropping two colours on the top left and right corner tabs.

2. Press **from**. The image updates with the two colours replacing the original low and high values of the image. The **map** function box in the **colour** menu now enables automatically (as a simple colour map has been created). Pressing **auto – from** automatically changes the image whenever a colour is changed.



3. Reverse the colours by pressing **map – invert**, if required.

4. To introduce more colours to affect the midtones of the image, add gradient tabs along the top of the mixing area and drag them until the required effect is achieved. To create a more contrasting image, paint in the mixing area. If **auto - from** is not enabled, press **from** after introducing each colour.

5. To transfer the current map on the image back into the palette, if the palette has changed, press **to**.

Save Palettes (Palettes Bin)

Palettes can be saved into the Palettes Bin for future use by pressing the **palettes** box on the Application Bar. This opens the bin and allows the current palette to be saved by pressing **save** at the bottom of the bin. Palettes can also be deleted or renamed by choosing a title in the bin then selecting the corresponding box on the right. Existing palettes can be applied by selecting one from the bin and dragging and dropping it onto the current palette.

Reset the Palette

To 'clean' the mixing area or to reinstate preset colours that have been overwritten, the original palette can be restored.

Select **palettes** on the Application Bar and, when the bin has opened, drag and drop the palette named 'standard' onto the current palette. Corner tabs are reset, but any gradient tabs remain and those colours can be reused, if required.

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Manage Processes

Using Process Menus

Apply a Process

On the top-left of the menu area, press on the required process box to display its menus to the right. If a change is made, the process title displays a small box to the right with a pink highlight indicating that a change has been made within this process.

If a stereo clip is loaded, each process (except the **stereo** process itself which contains left/right functions) has two square boxes, indicating the left and right eyes, so that different processes may be applied to each eye, if required.

See 'Stereo 3D User Guide' for more information.

Create Multiple Processes, Shapes and Cascades

To create multiple processes:

1. Press the **+** box to the top-left of the process menu (see screen shot).
2. Select the process to use from the list that displays. The new process now transfers to the process stack with a number to the right of it. A scroll bar displays as the stack becomes longer.
3. Apply the process, eg make another colour change. The selected box now turns pink.

In menus with shapes (eg **graphics, blur, colour, key**), a new shape is added by pressing **+** to the left of the generic shape stack. Press **+** again to toggle between the individual shape stack and the generic shape stack.

Similarly in the **key** menu, add a new cascade level by pressing **+** to the left of the cascade stack.

Rename Processes, Shapes and Cascades

Any process, shape or cascade can be renamed by right-clicking on the name, and using the hard or soft keyboard to enter a new name.

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Disable and Enable Processes

The square box to the right of each process name can be pressed to enable/disable the process, eg **dve** can be disabled to allow adjustment of the **key** process.

To 'mask' a process from the output, press the pink box; the box then turns light-grey. To 'unmask' a process, press the light-grey box which then returns to pink.

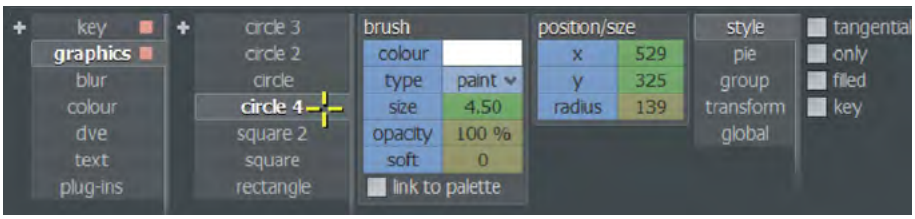
With all boxes on (pink), the full effect of the processes can be seen on the current frame.

Duplicate Processes and Settings

Press on the required process box, eg **colour**, then press <Shift> and drag up to create a copy of the process and its settings.

Re-order Processes and Shapes

To re-order MLT FX processes drag and drop a previously applied process (eg **dve**) up or down the stack. Unused processes cannot be moved. The top process is the last process in the chain (**colour** is first in the stack by default).



Process menus that provide shapes (eg **graphics, blur, colour, key**) allow previously created shapes to be pull forward or pushed back by dragging the shape name box up or down the stack (see previous screen shot showing **circle 4** being placed below previously drawn circles).

The shape at the top of the stack is placed in front of other shapes and the shape at the bottom is behind the others.

Reset and Delete Processes

Selecting the **reset** box followed by a process menu or parameter resets the values back to their default, but leaves any keyframes in place.

Selecting the **delete** box followed by a process menu, eg **blur,** deletes this process for the currently selected clip segment or video track.

Display Tools

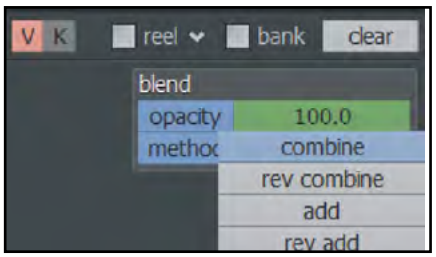
Luma Channels (RGB)

Under the Edit Window, there are luma channel selectors: **R**, **G** and **B**.

By default none of the channels are selected which means all the channels (R, G and B) display in the Edit Window.

If one of the luma channel selectors is pressed, only the selected channel displays in the Edit Window. This can be useful during correction to determine which channel has the most noise in it.

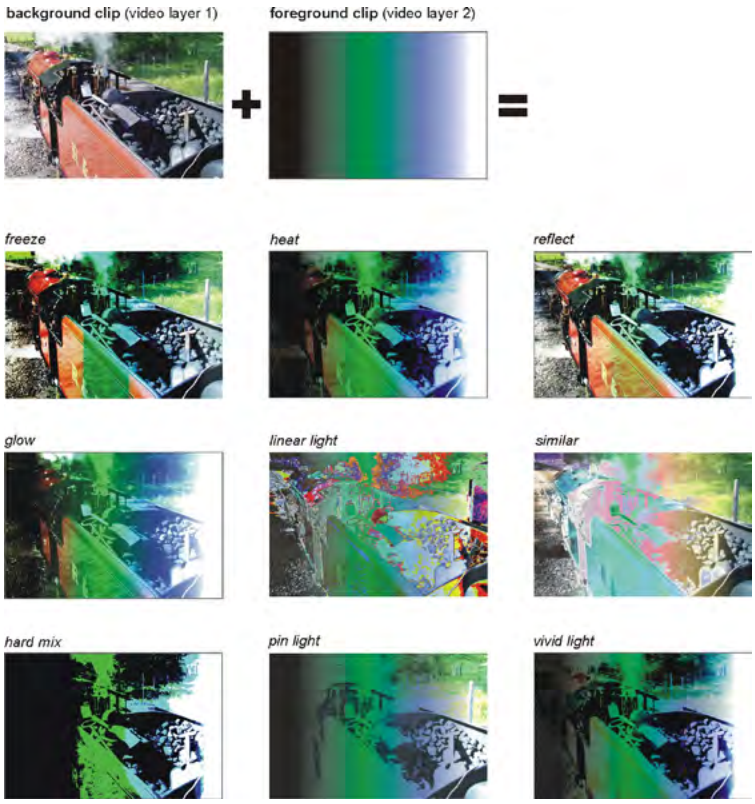
Blend Modes



On the right of the process menu area the **blend** menu displays. The modes accessed from the **method** scroll box affect how the video layers interact (how they display when one is placed over the other).

The value in the green **opacity** box controls the transparency/opacity of the video track. The value of 100.0 being totally opaque and the value of 0.0 being totally transparent.

Some of the available modes are shown in the following examples at 100% opacity.



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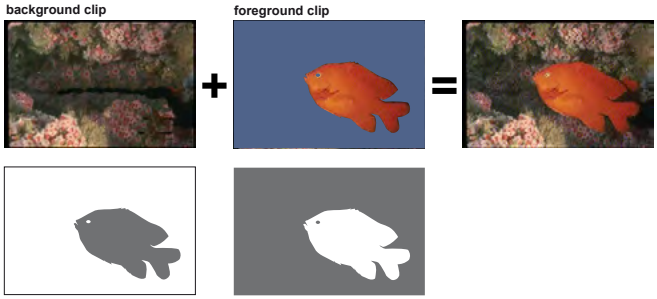
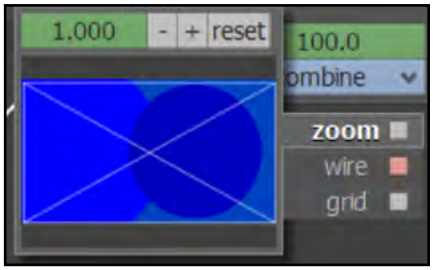
The **combine** mode uses the video track's key channel to cut a hole in the video track below (or the combination of lower video tracks and background). The foreground video track is then placed in this hole:



The **rev combine** mode reverses/inverts the video track's key channel and uses it to cut a hole in the video track below (or the combination of lower video tracks and background). The foreground video track is then placed in this hole.

Zoom/Reposition



Press the **zoom** box on the right of the process menu area to display the zoom pop-up.

When a zoom has been applied, the light-grey box turns pink.

To zoom in and out, use any of the following methods:

- Enter a numeric value in the green box and press <Return>.
- Press the **+** or **-** buttons.
- On the Edit Window, press <Shift> and drag up/down. This method can be used without opening the zoom pop-up.

To reposition the image area, either press and drag on the box within the pop-up (this represents the image area) or press <Ctrl> and drag on the Edit Window.

- Press **reset** to return the image position and zoom to its default (1.000).

Wire Mode

Press the **wire** box on the right of the process menu area to display the wire pop-up.

This wire colour is used where processes use positional outlines and cursors or when highlighting items (eg **dve, text** and **graphics**).

Set the wire colour by selecting one from the palette then pressing the box to the right of **colour** in the pop-up to transfer it (<F2> toggles the palette on/off). With **transient** ticked, the wire only displays when the cursor is over the image area, whereas ticking always displays the wire regardless of cursor position.

Grid Display

Press the **grid** box on the right of the process menu area to display a grid over the image area.

Enter the grid spacing/frequency required in the green numeric boxes and select whether the objects are to be snapped to horizontal, vertical or both lines of the grid by ticking the **x snap** and/or **y snap** boxes.

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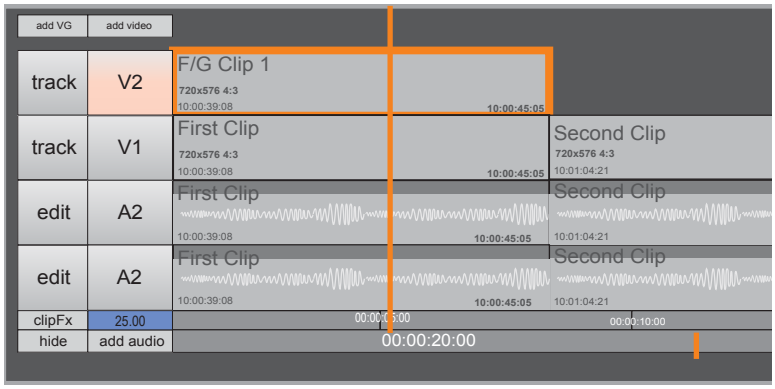
Apply Processes

Timeline Controls



A process can be applied to a segment (or specific multiple segments), to a group of segments (the group must be defined before applying the process), to a track, or to the whole edit:

- Press on a segment (or multiple segments) to apply any subsequent process to those segment(s).
- Press the **track** filter box on a video track (eg V1, V2, etc) to apply any subsequent process to this track only.
- Press the **clipFX** box to apply any subsequent process to the whole timeline (all the video tracks.
- Select the group to apply a process to.

See “Groups” on page 2-12.

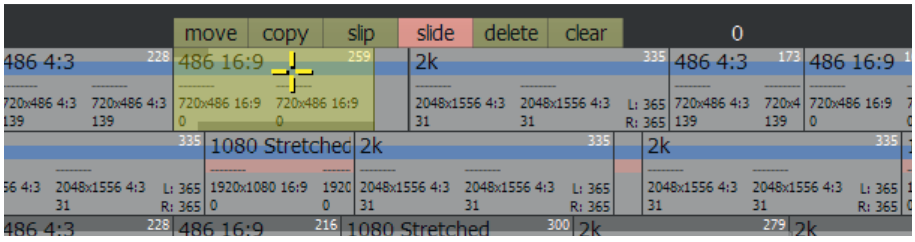
Segment Effects

A single segment, multiple single segments or blocks of segments on the timeline that are on different tracks can be selected. Both mono and stereo media can be selected.

Select an Individual Segment

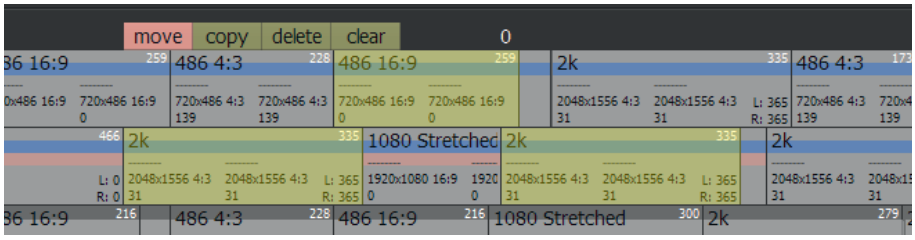
There are two ways to select an individual segment. Either:

- Double-click on the segment required, or
- Hold down <Ctrl> and single-click on the video segment to select.



Select Multiple Segments

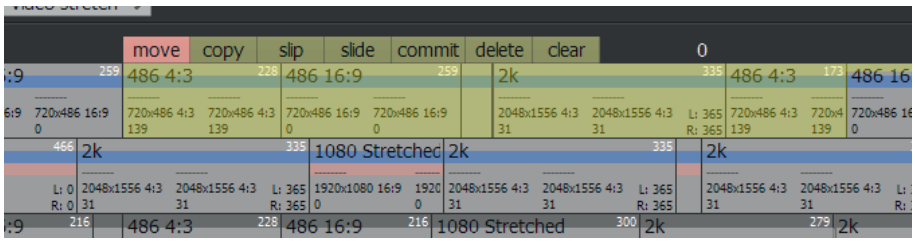
Multiple single segments over different tracks can be selected by holding down <Ctrl>. and then clicking once on each segment required.



Select a Block of Segments

To select a block of segments on the same track:

1. Double-click on the first segment.
2. Hold down <Shift>.
3. Click on the last segment to be included in the block.

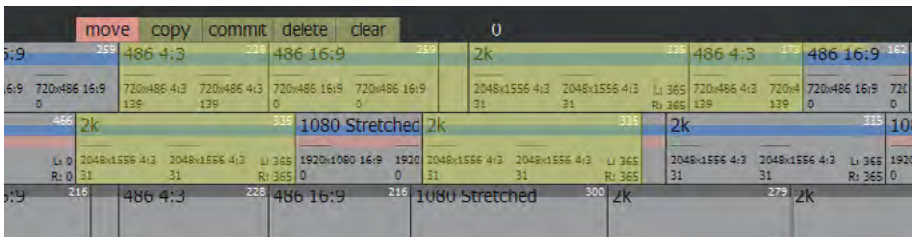


The yellow ‘move’ menu now displays above the highlighted segments.

Select Multiple Segments and a Block

To select multiple segments on different tracks in addition to a block:

1. Select a block of segments (see previous section).
2. Hold down <Ctrl>.
3. Click on each single segment to be added.



The single segments and block are now highlighted yellow.

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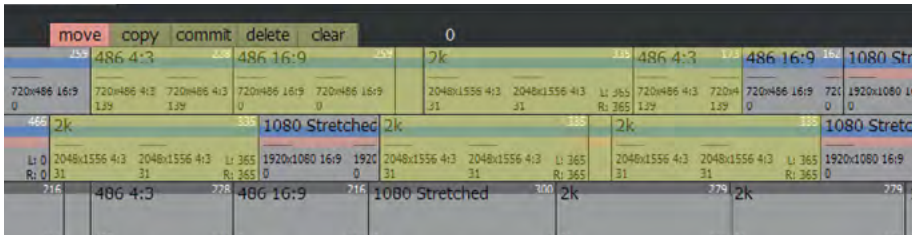
Select Multiple Blocks and Multiple Segments

To select multiple blocks and multiple single segments:

1. Double click on the first segment.
2. Hold down <Shift> and click on the last segment in the block.
3. Hold down <Ctrl> and click on a single segment.
4. Hold down <Ctrl> and select the single segment that is to start the new block.
5. Hold down <Shift> and click on the last segment required in the block.
6. Repeat steps 4 - 5 to add additional blocks.



Clear Single and Multiple Selections

To deselect single segments, hold down <Ctrl> and click on the segment to deselect.

To clear the selection from a whole track, click on the track filter box (eg **V1**) and press **clear** in the yellow 'move' menu.

Disable Track Selections

When selecting a video track using the filter box (eg **V1**), the selected segments on the other tracks are not visible, and are therefore not affected by any subsequent action performed using the 'move' menu or any applied processes. Deselect the track filter box to view the other tracks again.

Available 'Move' Menu Functions

When segment(s) are selected (see next section), the yellow '**move**' menu displays with options that can be used on the selected segments.

Move, Copy, Delete and Clear

These functions are available when selecting any segment(s):

See the Timeline Editing User Guide for more details.

Slip and Slide

These functions are only available when adjacent segments are selected. Segments can be selected across different tracks, but the segments must be adjacent on each track.

When segments are moved in this way, the keyframes are also moved. Holding down the <Ctrl> key together with **Slip** or **Slide** leaves keyframes where they are and moves the video. Holding down <Ctrl> and <Shift> together with **Slip** or **Slide** leaves video where it is and moves the keyframes.

Commit

The **commit** function removes the edit point between each video track segment. If two neighbouring segments are committed together, they combine to become one big segment. The **commit** function is therefore only available when multiple segments in a row are selected. Additional segments can be selected on several tracks: if the selected segments are adjacent the **commit** function operates as normal, but single segments are not affected. When multiple random segments are selected the **commit** function does not display.

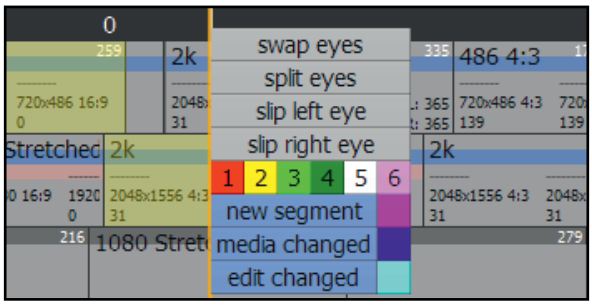
The commit function cannot be used on audio tracks/segments.

Highlight Selected Segments

A highlight can be applied to selected segments on the video tracks.

To apply a highlight:

1. Right-click on one of the selected segments.
2. Press on a highlight colour in the pop-up. All the selected segments now highlight in the selected colour.



Three colours are already assigned by default:

- purple indicates **new segment**
- blue indicates **media changed**
- cyan indicates **edit changed**

The default colours can be changed in the <F1> Configuration Window.

See the Workstation and Seat - Setup and Admin User Guide for more details.

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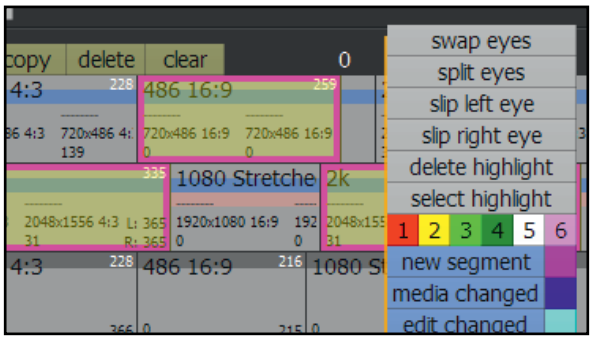
To remove a highlight from a single segment:

1 Right-click on the corresponding segment.

2 Press **delete highlight**.

To remove highlights from all the segments:



1 Right-click on a highlighted segment.

2 Press **select highlight**. This selected all the highlighted segments.

3 Press **delete highlight**. All the highlights are now deleted.

4 The highlight colour can be changed by selecting all the highlighted segments and pressing on a new colour.

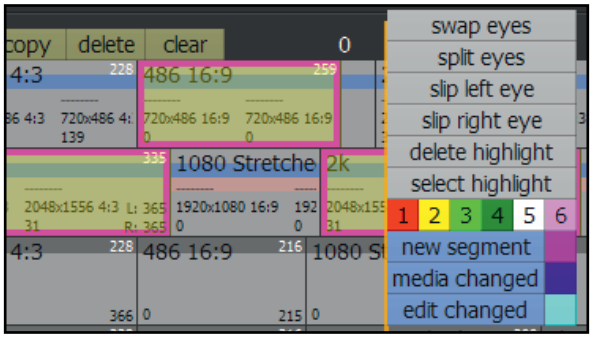
Apply Processes to Individual or Multiple Segments

After selecting a single or multiple segments, MLT FX processes can be applied.

The process is applied in the normal manner, but with the segments selected. The process is only applied to the selected segments. Process parameters can be changed on a segment by re-selecting it and adjusting the settings in the process menu.

Apply a Process to Highlighted Segments

To apply a process to highlighted segments only:



1 Right-click on one of the highlighted segments.

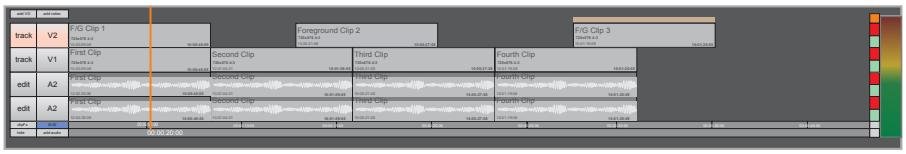
2 Press **select highlight**. This selects all the highlighted segments.

3 Apply the MLT FX process with the highlighted segments still selected.

Track Effects

Apply Processes to Individual Tracks

Apply a process to a single track by selecting the corresponding **track** selection box on the left of the timeline.



Any MLT FX processes are now applied to the whole video track. To change a process parameter on a track, simply re-select the **track** box and adjust the settings.

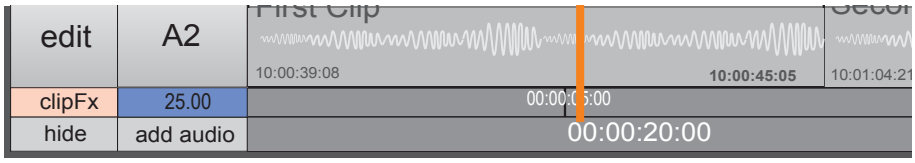
By default, processes are applied to the entire track, but partial track settings can be applied by selecting **track** then marking in and out (blue highlight) before applying a process change.

Process effects can be extended from the end of the clip segment to the current timeline cursor position by pressing the <X> key.

Clip Effects

Apply Processes to Timeline

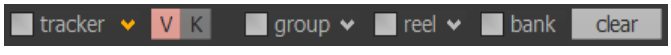
The whole timeline can have processes globally applied by pressing the **clipFx** box on the bottom-left of the timeline. This is useful to apply, eg DVE size and position, or a primary colour grade etc.



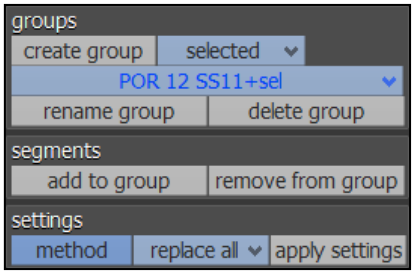
Groups

Group segments together, and apply processes to a group of segments simultaneously.

- To set up groups, press the down arrow to the right of the **group** function.



The group setting menu displays:



By default all segments are included in a group titled **all.**

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Add a New Group

To add a new group:

1 Define the group type from the **selected** scroll box:

selected the group is based on a selection of segments added across tracks.

originator the group is based upon the originator of the initial segment added to the group. A character limit can be set with this group type, particularly useful for allowing user-definable filtering back to the file root. The character limit is enabled/disabled with the **limit** box, and the value is set in the green numeric box. When setting the limit the originator name displays in accordance with the current limit value.

source tc the group is based on the source timecode of the initial segment added to the group.

rush the group is based on the rush id of the initial segment added to the group. If there are several shots edited from the same original rush, they are automatically added to this group.

highlight (available only when **highlight changes** is enabled in the <F1> Configuration Window) bases a group upon the colour of the highlight of the initial segment added to the group.

Create a 'rush' group before any rendering. The identification of rush segments change after a render. If the group is created before rendering, the rush group remains throughout subsequent renders.

2 Select a segment or multiple segments on the timeline and press **create group.**

3 The new group is named automatically with the title of the initial segment with the group type appended to the end of the name. Press **rename group** to title it differently, if required.

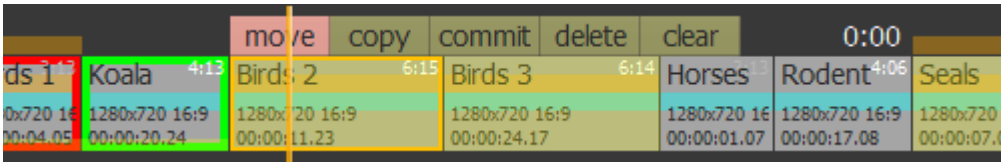
All segments within a group have a cyan bar running across the segment indicating that they are part of the currently selected group.

To disable groups, untick the box to the left of the **group** function. All groups and settings remain but the segments are no longer grouped. Ticking the box re-enables the groups function, and regroups any segments as they were previously.

Add/Remove Segments

Segments can be added to or removed from a group by selecting one or more segments and pressing **add to group**, or **remove from group** respectively.

Multiple non-contiguous segments can be selected by holding down <Ctrl> and pressing on segments in turn. As each segment is selected it highlights yellow.

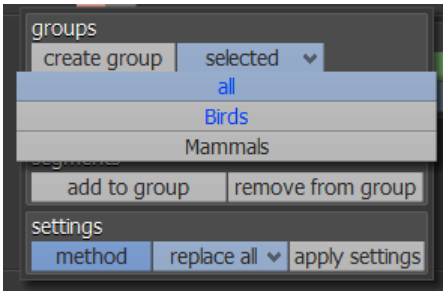


To select a range of segments hold <Ctrl> and press on one segment. Press <Shift> and press on the segment at the other end of the range to be selected. The range highlights yellow.

Manage Multiple Groups

Multiple groups can be created and segments can 'belong' to any number of groups.

Select a segment and press on the group name box to see which groups the selected segment is a part of. The groups to which the segment 'belongs' are indicated alphabetically in blue text at the top of the list.



Apply Processes to a Group

Any MLT FX processes performed on a segment can be replicated across all segments in a group.

1. Select the segment with the unrendered process attributed to it.
2. Select the group name to which the process is to apply.
3. Press **apply settings.**

The process is applied across the other segments in the same group.

If the process is a colour correction, the method must be set before applying the settings.

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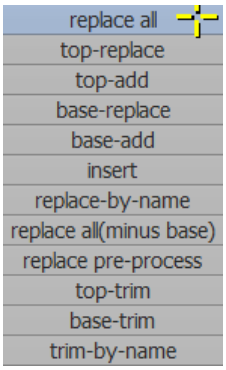
Method Options for Group Colour Correction

When applying a colour correction to a group, select one of the method options to ensure the correct processes are applied to the group:



replace all	replaces all cascades with the cascades from the currently active segment
top-replace	replace the top cascade of each segment with the currently active cascade
top-add	add the currently active cascade as a new cascade at the top for each segment
base-replace	replace the base cascade for all segments with the currently active cascade
base-add	add the currently active cascade below the base of all segments
insert	inserts the currently active cascade to the same level in all segments, pushing any other cascades up one level
replace-by-name	all cascades in the group with the same name as the currently active one are replaced
replace all (minus base)	replaces all cascades except the base with the cascades from the currently active segment
replace pre-process	replace the pre-process with the pre-process setting or 3D LUT from the currently active segment

The trim features only apply the change in values of parameters in the colour process data to all segments in the group.

top-trim	trims the top-most cascade of the destination segments
base-trim	trims the bottom-most cascade of the destination segment
trim-by-name	trims the cascade on the destination which has the same name as the source cascade

The trim applies only to parameters in Primary, Defocus, Lights and Ranges. If the destination segments have keyframes, only changes in values are applied to the destination segments. Source segment keyframes are not copied to the destination.

Save and Reuse Settings

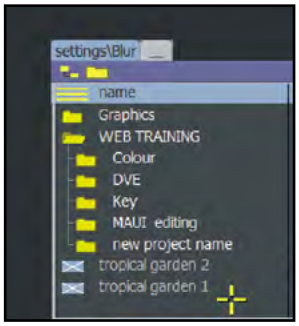
There are several different methods of saving and transferring MLT FX processes (eg blur parameters) between projects. These include the Settings Bin, Storyboard and Stillstore.

Settings Bin

Process settings can be saved and archived independently of the timeline edit via the Settings Bin, then used on other projects as required.

Save a Settings Clip

To save a settings clip after making the required process changes on the timeline material:



1. Press the settings tab on the Application Bar to open the Settings Bin.
2. Select the process to save, eg **Blur** (or **All** to save all processes) from the blue scroll box at the bottom of the Settings Bin.
3. Press the **save** box on the left and in the soft keyboard pop-up enter the required title.

The Graphics selection box, if enabled, saves only the currently selected shapes (instead of all shapes on the current layer).

4. Press **end** or <Return> . The saved settings clip now displays in the bin with the process type displayed on the right. A blue icon with a cross displays on the left.

Apply a Settings Clip

To apply a previously saved settings clip to the current timeline:

1. Open the Settings Bin.
2. Select the process from the blue scroll box at the bottom, eg **Colour**. All the saved colour settings clips now display in the bin.
3. Drag and drop the required settings clip from the bin onto the Edit Window. The image now updates accordingly and a pink square box displays in the menu area to the right of the process name, indicating a process change.

When transferring **Colour** settings, press **insert edit** before dropping the setting onto the image area. This applies only the last keyframe values in the settings clip (eg those for **lift**, **gamma**, **gain**) to the current clip at the cursor position. This is useful to transfer the same colour values from the end of one clip to the start of the next. If **insert edit** is not pressed, all the keyframe values (and not just the last) are transferred to the clip regardless of cursor position.

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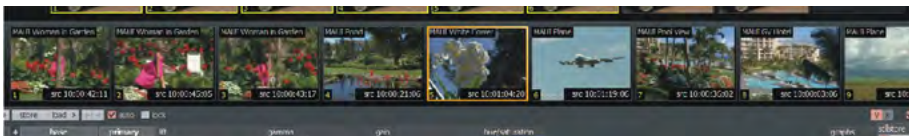
In MLT FX, settings can also be dragged from the Settings Bin and inserted anywhere in the Stillstore for future use.

See Grading User Guide for more details.

Storyboard



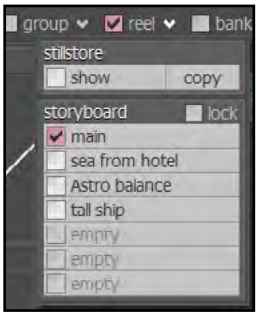
In the Edit application, the Storyboard reel is used to assemble and move clips for the current timeline edit and to navigate through the edit. In MLT FX the functionality is slightly different: single or multiple processes from clips on the Storyboard can be previewed and transferred to the timeline edit, and different Storyboards can be saved during a project, which can then be used on other projects.

Stereo 3D Storyboard Clips

If the Storyboard contains Stereo 3D clips, only the left eye displays, although both left and right eye processes are stored and can subsequently be applied.

Display a Storyboard

To display the Storyboard:



1. Select the **reel** tick box on the top-right of the menu area. The first frame of each clip in the current timeline edit (ie the main Storyboard) now displays as tiles along the reel display. If the timeline is empty, no clips display along the reel.
2. To display a different Storyboard, press the arrow on the right of **reel** to display more options (see screen shot), then tick a reel to open it.
3. Scroll along the reel, preview process settings on timeline clips, and apply them, if required.

Preview a Process

Hold down the cursor on any tile to preview these settings on the current timeline clip. Release cursor pressure to hide the preview. Only the settings for the current process are previewed.

Apply Processes

Each Storyboard clip may contain multiple processes, eg **colour**, **text** and **dve**. Either selectively apply one of these processes, or apply all processes to the current timeline clip:

selective Position the timeline cursor over the required clip, then open a process (eg **colour**). Press on the required Storyboard tile then slide the cursor up to apply this process in its current state (ie enabled or disabled) to the timeline clip.

all To apply all processes in their current state (ie enabled or disabled) and from within any process, position the timeline cursor over the required clip, hold down <Ctrl> and on the required Storyboard tile, slide the cursor up.

A Storyboard tile containing a Stereo 3D clip displays the left eye only, but both left and right eye processes are stored and subsequently applied.

Save, Load and Delete a Storyboard

Save

During a project, multiple Storyboards can be saved, as required. These can then be used on other projects.

- Select the **save** box in the bottom-left of the menu area, then select **storyboard** in the pop-up and enter a name.

The Storyboard is saved in the Clips Bin and consists of one frame for each segment plus all processes and keyframes, which also makes archiving more efficient.

Load

To load a Storyboard (or load an edit with processes), to preview/transfer processes to the current project, drag the Storyboard from the Clips Bin and drop it either on the reel display area, or over one of the '**empty**' slots in the Storyboard list.

Alternatively, drop it over an existing Storyboard in the list to overwrite the existing entry. The new Storyboard's name now displays in the list. A maximum of six Storyboards can be loaded in addition to the current '**main**' Storyboard.

Delete

To delete a Storyboard from the reel list only (not the Clips Bin), press **delete** followed by the Storyboard name in the list: the '**main**' Storyboard cannot be deleted. To delete a Storyboard from the Clips Bin, select its title in the bin and press **delete** from the column on the right.

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Options

Deselect **reel** to hide the Storyboard. To disable the current Storyboard but not the reel display, deselect it via its tick box. Tick **reel** and **show** to display the Stillstore.

Tick the **vg diff** box in the reels menu to show a difference mode between the main timeline and the video guide track. This is useful to quickly see any differences between the offline and online.

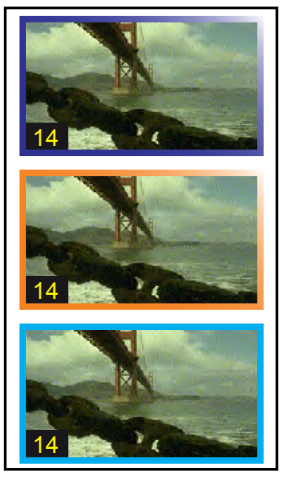
By default, the Storyboard is 'unlocked' in relation to the timeline edit. In this mode (**lock** box is unticked), the Storyboard tiles initially correspond to the clip segments on the timeline but do not scroll with the timeline automatically. This is useful if, for example, a process from a clip near the end of the Storyboard needs to be applied to a segment on the timeline that is nearer the start. Scroll through the Storyboard using the bar on the right in this mode.

If required, tick the **lock** box to synchronise the 'main' Storyboard with the timeline, so that during navigation they move together.

Timecode Display

Press on any Storyboard tile's timecode display to switch between destination timecode, source timecode (src) and time of day (tod). Timecodes must be enabled in the **Clips** menu, in the <F 1> Configuration Window, first.

Cursor and Frame Colours



A Storyboard clip that contains the current MLT FX process is indicated by the graduated blue outline around the tile. For example, a blur process is indicated when **blur** is open, but not when **dve** is open.

The current timeline cursor position is indicated in the Storyboard by the graduated orange outline around the tile. This obscures any other type of clip outline. This turns to graduated yellow if part of a clip group.

A clip segment that is part of the current group is indicated with a cyan outline around the tile.

See Grading User Guide for details of using the 'Group' function to transfer cascades of colour correction.

Navigate and Zoom

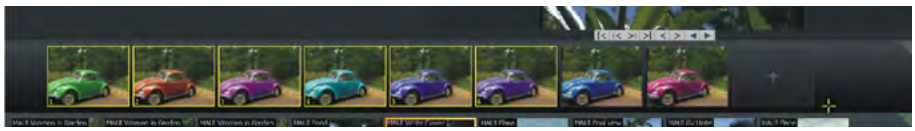
Press on any Storyboard frame and drag left or right or use the arrow keys to step through the reel.

If the Stillstore and Storyboard are both displayed, the Stillstore is displays above the Storyboard. Both the Storyboard and Stillstore have a icon on the top-right of each display which highlights green to indicate which has current focus (ie which is currently selected/ active).

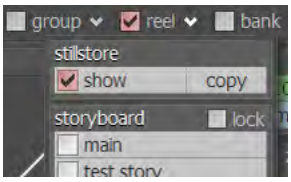
Drag the icon up or down to increase or decrease the area of the display. Press the icon to return to the default size.

In unlocked mode, use the scroll bar on the right to navigate through the contents and press and hold <Alt> then drag the icon to zoom in/out.

Stillstore



Processes can be selectively or globally applied from the Stillstore to the current timeline clip or transferred from one project to another. Several different settings for a process eg **colour** can be applied to the same frame of a clip and, each time a change is made, saved into the Stillstore. These stills can then be compared next to each other.



Tick the **reel** box then press the arrow on the right. Below **stillstore** tick **show**. Stills now display above the Storyboard (if enabled) and below the Edit Window. Current stills are indicated by a yellow outline on the display and are numbered 1-6 (although more can be added and displayed).

Stereo 3D Stillstore Clips

If the Stillstore contains Stereo 3D clips, only the left eye displays, although both left and right eye processes are stored and can subsequently be applied.

Preview a Process

Hold down the cursor on any tile to preview these settings on the current timeline clip. Release cursor pressure to hide the preview. Only the settings for the current process are previewed.

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Apply Processes

Each Stillstore clip may contain multiple processes, eg **blur, text** and **dve**. Selectively apply one of these processes or apply all processes to the current timeline clip:

selective Position the timeline cursor over the required clip, then open a process (eg **blur**). Press on the required Stillstore tile then slide the cursor up to apply this process in its current state (ie enabled or disabled) to the timeline clip.

all To apply all processes in their current state (ie enabled or disabled) and from within any process, position the timeline cursor over the required clip, hold down <Ctrl> and on the required Stillstore tile, slide the cursor up.

A Stillstore tile containing a Stereo 3D clip only displays the left eye, but both left and right eye processes are stored and subsequently applied.

Save a Set of Stills

To save the current set of stills, press **copy** in the **reel** menu. A Floating Clip displays that can then be dragged to the desktop or saved in the Clips Bin with '**Stillstore Clip**' as the default name.

Load Previously Saved Stills

A saved set of stills can be dragged from the Clips Bin and dropped onto the Stillstore reel display or the **show** box in the **reel** menu.

Transfer from Settings Bin to Stillstore

Settings can be dragged from the Settings Bin and inserted anywhere within the current Stillstore for future use. Open the Settings Bin, drag the setting from the bin and then drop it over the required position (indicated by the yellow highlight) on the Stillstore reel. The frame with its settings is now inserted into the Stillstore.

Add New Stills

After making a process change, save the new still to the Stillstore by pressing the **+** frame on the reel display.

Delete Stills

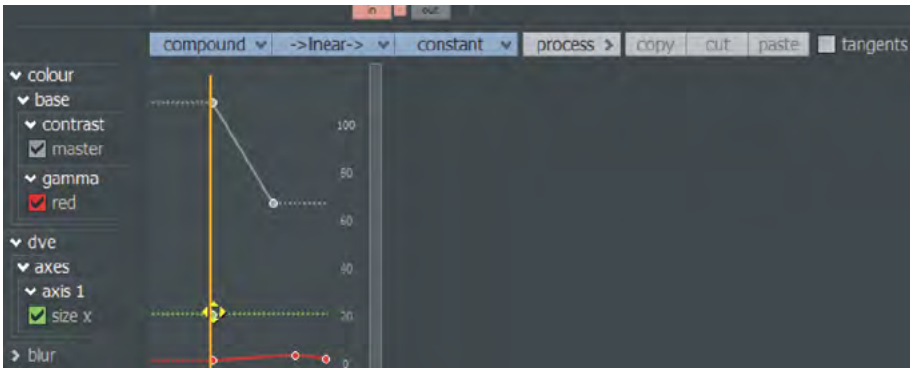
To delete a still, press **delete** then the required still on the reel display. To delete a set of stills, press **delete** followed by the **show** box on the reel menu.

Navigate and Zoom

See "Navigate and Zoom" on page 2-20.

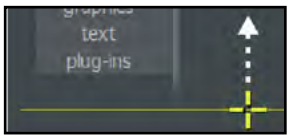
Using Keyframes

In MLT FX there is a set of keyframe curves for each clip segment, for the whole track, and for the whole timeline.



Keyframes display for each clip segment after a process parameter has been changed. Parameters that define the change between each keyframe can then be adjusted using graphs if required. These graphs display the rate of change of each parameter value (eg size, position, colour etc) against time.

Open the Graph



Open the graph by right-clicking (<Alt> + tap for pens) or dragging-up the yellow dividing line between the timeline and the process menu area. This also determines the vertical scale of the graphs. Right-clicking again returns the graph to its default position.

Graph Viewing Modes

Tapping on the timeline ruler expands the current clip segment to fill the width of the screen; this allows graphs to be adjusted more accurately.

A white bar displays on the timeline ruler to allow scrolling along the whole timeline. Tapping on the white highlight of the timeline ruler returns the display to match the width of the clip segment.

The zoom function on the right of the process menu area only affects the view of the image area and not the keyframe graph.

The display of parameters is hierarchical allowing them to be collapsed if required. All keyframes can be seen either altogether, in groups, or individually for each process (eg **dve**).

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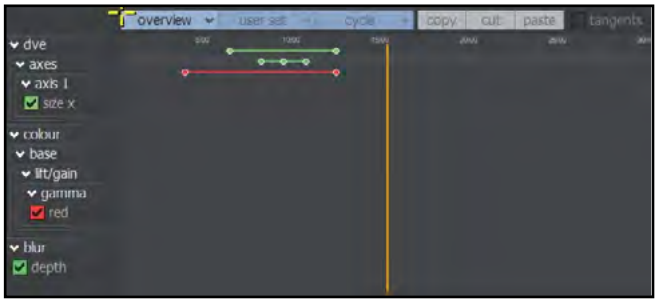
There are three modes for viewing the keyframes which can be selected from the blue scrolling box:

compound - where all curves use the same scale:

separate – where each curve is separate and scaled individually:

overview – where the horizontal position of all keyframes displays, but without any vertical scale:



View Items in the Parameter Curve Stack

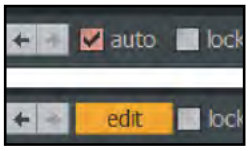
All the parameter curves are defined in the stack to the left of the keyframe graph. View a specific keyframe function within a process by either pressing on each title, ie **dve - axes – axis 1**, or opening the full list of items at once by pressing <Ctrl> and the title of the items to view, ie <Ctrl> + **colour**.

Hide Parameter Curves

Parameter curves can be hidden by deselecting the corresponding tick box on the left of the graph area. Pressing and holding down on the parameter name toggles a solo view on/off.

Create and Edit Keyframes

Insert Nodes



When the **auto** box is ticked, a keyframe node is inserted automatically whenever a parameter is changed. If **auto** is unticked, confirmation is required before any node is inserted. Press the orange **edit** box that displays.

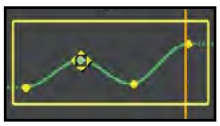
With the **auto** box ticked, a parameter change automatically creates a keyframe of the new parameters indicated by a node displaying on the graph. Transitions between the nodes are interpolated on rendering. Nodes are different colours for each parameter – although nodes change to yellow if the **tangents** check box is selected or if a node is selected.

1. To set an initial keyframe (ie start point) for a process, select the required timeline point from where to start the change
2. Use the process parameter boxes to make the change (eg to **Dve – size**)
3. If required, select another frame and make another change (eg to **size**), then repeat as necessary, or simply move to the frame to finish on and make the final change.

Insert a keyframe by pressing on the required position on the graph. The timeline cursor moves to this position and the parameter value can now be changed using the green numeric boxes or by dragging the node or curve (with **tangents** on) in the graph display.

Select and Deselect Nodes

Any existing keyframe can be selected then edited by stepping to it using the ← and → boxes (or <Ctrl> + <←> or <→> on the keyboard) then making the required process changes. The keyframe can also be edited using parameter graphs by directly selecting nodes on the parameter's keyframe curve.



Select multiple nodes by dragging a lasso (yellow box) around them.

Select or deselect nodes individually by holding down the <Ctrl> key and tapping on them. This makes it much easier to isolate keyframe nodes for moving or copying.

Move Nodes

Move a node by placing the cursor on it then dragging it up/down or left/right. This increases or decreases the value for the selected parameter at the current keyframe. The curve between the nodes changes accordingly to provide the best interpolation between all keyframes.

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Delete Nodes

Press the **delete** box in the top-left of the process menu area followed by tapping on the node to be deleted. Alternatively, drag a lasso around the nodes to delete, then press **delete**. To delete all keyframes, press **delete** then tick **keyframe** followed by **all**.

Copy Nodes

When nodes are selected, the **cut** and **copy** boxes highlight. Choose one of these boxes, then move the timeline cursor to another frame and transfer the cut/copied nodes by pressing the **paste** box.

Group Nodes

Groups of keyframe nodes on the graph can be selected (by dragging a lasso around them) and then all moved by the same amount using the box cursor around the lassoed area.

Moving the left or right edges of the yellow box cursor moves the keyframes earlier or later in the parameter effect while the node closest to the opposite edge remains fixed. Moving the top and bottom edges of the yellow box cursor increases or decreases the rate of change between the keyframes while the node closest to the opposite edge remains fixed.

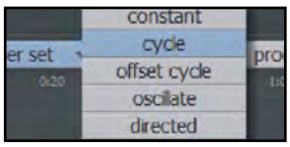
Modify the Curve (Tangents)

When the **tangents** box is ticked, the nodes turn yellow and three coloured lines emanate from the node with a 'handle' on each end.

To change the shape of the curve, and therefore how smooth the transition is:

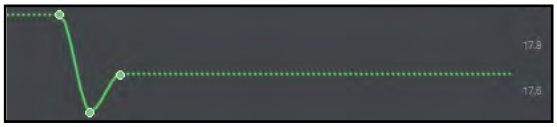
- Drag the end of the yellow line to affect the amplitude of the curve entering and exiting the current node.
- Drag the end of the pink line to affect the curve entering the node.
- Drag the end of the red line to affect the curve exiting the node.

Keyframe Controller

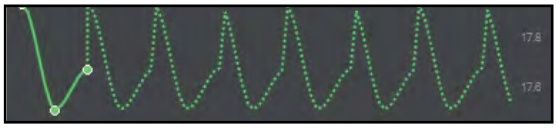


Groups of nodes on the curve can be repeated and modified by using the keyframe controller function selected from the blue scrolling box:

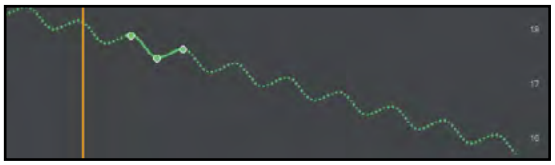
constant – maintains the value of the first and last node in the segment while the nodes in between are adjusted.



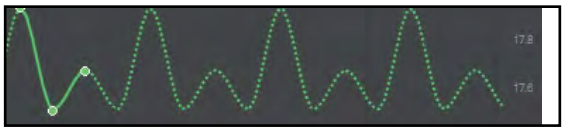
cycle – repeats the selected nodes for the length of the segment.



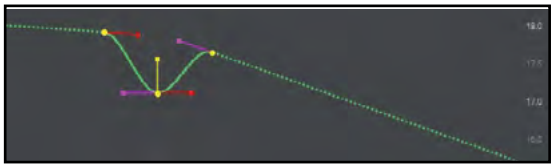
offset cycle – works in the same way as **cycle**, but the first node position is matched to the last position of the previous cycle.



oscillate – repeats and flips the cycle.



directed – maintains the direction of the curve from the first to last node.



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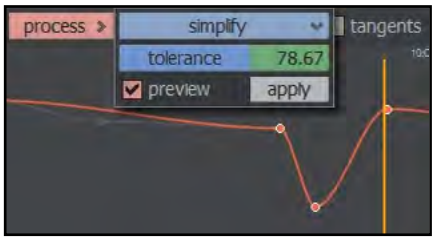
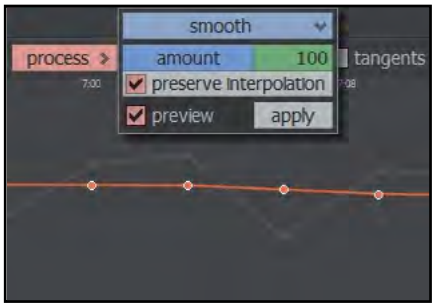
Keyframe Processes

There are a number of different processes that can be applied to the currently selected keyframe nodes (displayed yellow) to help achieve the desired parameter effect.

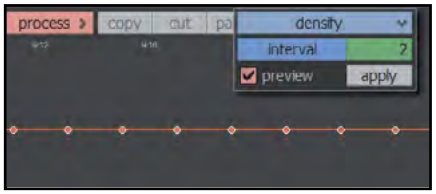
Do this by pressing the **process >** box and then select one of the following from the scroll box in the pop-up:



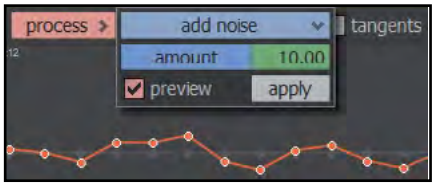
The **simplify** function removes redundant nodes. With the **tolerance** value set to **0** any nodes that are not affecting the overall curve are removed. If the **tolerance** value is increased, more nodes are removed.



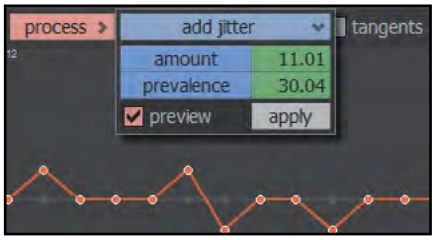
The **smooth** function smoothes or 'averages out' the keyframe curve. A high value in the **amount** box results in a smooth graph. By default, smoothing always draws the graph to a default curve, but if a linear interpolation was initially applied that should be kept, **preserve interpolation** must be checked first.



The **densify** function inserts nodes into the parameter curve at intervals determined by the numeric value entered in the **interval** box. This should be done before applying the **add noise** or **add jitter** functions.



The **add noise** function creates random noise in the vertical axis determined by the numeric value entered in the **amount** box.



The **add jitter** function adds or subtracts a constant level in the vertical axis depending on the numeric value in the **amount** box. The **prevalence** value controls the random frequency of this amount.

The **quantise** function works from left to right and 'rounds' the position of the nodes to the **interval** amount giving the nearest fit for the keyframe graph.

The **slide** function allows all nodes or a selection of nodes to be copied or moved numerically, with the option of also mirroring them, using the **mirror** tick box.

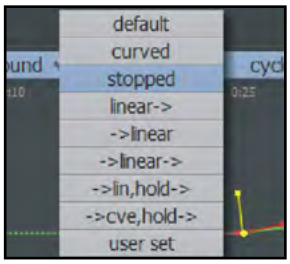
The **de-extrapolate** function adds nodes where usually there are not any; for example at the beginning and end of a segment (there must be a minimum of one keyframe initially). This is also useful for adding keyframe nodes to the graphs created within the Keyframe Controller.

Lock Function

The **lock** function in the top of the process menu area can be used to control which nodes on a parameter curve are affected by a change to the parameter:

- With the **lock** function disabled (ie the box is not ticked) any changes made to a value only affect the currently selected keyframe.
- With the **lock** function ticked any changes to a value affect all of the keyframes on the parameter curve.
- Dragging to the right on the **lock** box displays and allows all keyframes after the currently selected node to be adjusted while leaving those before the selected node unaffected.
- Dragging to the left on the **lock** box displays and allows all keyframes before the currently selected node to be adjusted while leaving those after the selected node unaffected.

Define Keyframe Transitions



The change in parameter values between keyframes (ie the transition) can be controlled in a number of ways and can be set to suit the type of effect that is required.

The apparent movement of the transition into and out of each keyframe can be set as follows:

default The rate of change adopted gives the best curve fit to move smoothly through the adjacent nodes.

curved The rate of change slows down as it approaches the node and speeds up as it leaves the node.

stopped The change stops as it reaches the node.

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linear->	The rate of change remains constant out of the node.
->linear	The rate of change remains constant into the node.
->linear->	The rate of change remains constant into the node and out of the node.
->lin,hold->	The rate of change remains constant into the node and then stops until the next node.
->cve,hold->	The rate of change slows down as it approaches the node and then stops until the next node.
user set	The rate of change into and out of the node are set using the tangents on each node of the curve.

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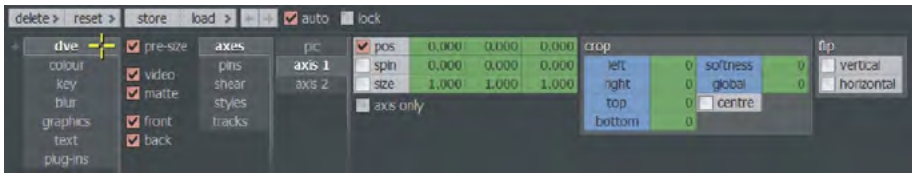
Process Types

DVE Process

Axes Menu

When the **dve – axes** menu is selected, numerical control of **pos** (position), **spin** and **size** is provided by the green **x, y** and **z** boxes.



There are different numerical values for each of the DVE axes; **pic** (picture), **axis 1** and **axis 2**. There are also a number of flat picture processes such as **crop**, **shear**, **pre-size**, **flip** and **centre** that can be applied to the actual image content.

If the **video** box is ticked, the video channel for the currently selected video track displays.

If the **matte** box is ticked, the associated key or matte channel for the currently selected video track displays.

The **front** and **back** tick boxes determine whether the layer image displays on the front, back or both sides when applying a DVE change to the selected video.

Pre-size

If **pre-size** is selected from the blue scroll box the image is automatically re-sized to match that of the background video track or render format, used in conjunction with the **Aspect conv** setting in the <F1> Configuration Window to either **box** or **cut**.

The other options are **match x**, or **match y** which respectively match source image pixels 1:1 horizontally, or source image lines 1:1 vertically with the render format size.

In all cases the aspect ratio of the source is maintained.

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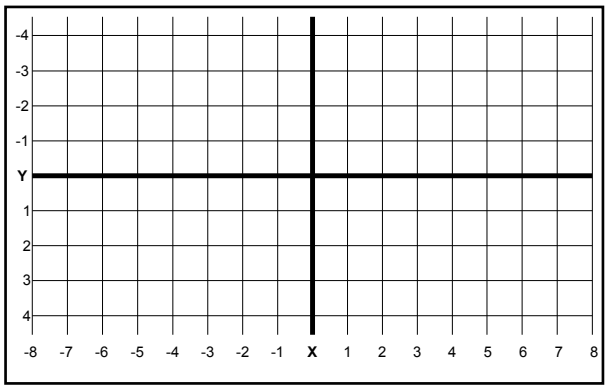
Position, Size and Spin in 3D Space

Each frame of any clip is saved as a flat 2D image then manipulated in 3D space before being projected back onto the 2D television screen. The frames are manipulated using 3D modelling equations controlled by the user entered values of X, Y and Z for position, size and spin.



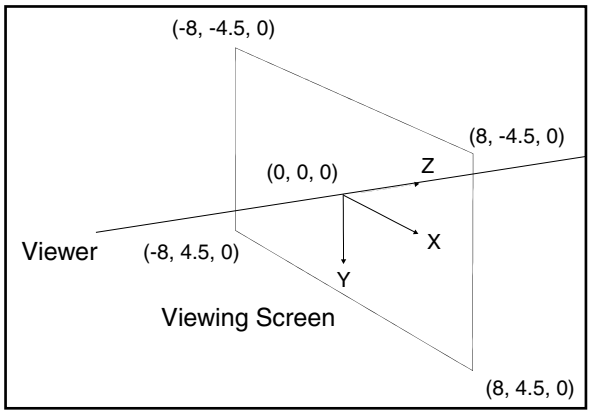
The position of any frame of 16 x 9 aspect ratio material is defined on the television screen by a 16 x 9 x 50 grid (corresponding to the X, Y and Z values) with a centre at 0X, 0Y and 0Z.

The values are calculated and entered in units and decimals of grid. Images can be placed off-screen using values outside those of the 16 x 9 grid of the screen.

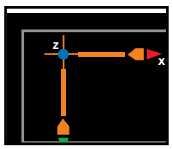
The 16 x 9 (or 16 x 12 for 4 x 3 aspect ratio material) grid is nominal for the television screen. The actual picture area is slightly larger than this grid and is shown by the default positions of the corner 'pin' arrows. This grid and the pin arrows can be used to accurately define the edges of the images.

The X, Y and Z coordinates can be entered either numerically, by the pen, by using the 3D cursors, or by corner pinning.

3D Cursors – Pic, Axis 1 and Axis 2

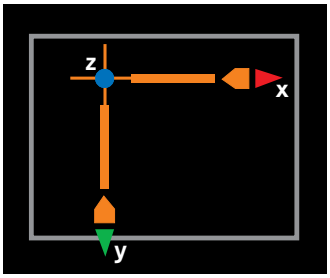


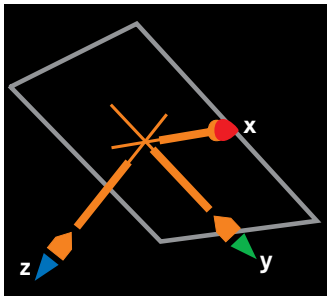
The 3D cursors are a useful aid to setting-up off-centre spins or more complex movements. They show where the control axes of the keyframe are located and can help to visualise the movements required for a specific effect.



Select **pic, axis 1** or **axis 2** followed by **pos** or **size**, then place the cursor over the image area to view the 3D cursors (note that the cursors for **pic and axis 1** are orange; **axis 2** are green). The picture axis is suspended from axis 1; axis 1 is suspended from axis 2, and axis 2 is suspended from the centre of the screen.

Before a spin change has been applied, the X and Y cursors display as shown in the first diagram below and the blue Z cursor does nothing. When a spin is applied, the Z cursor moves accordingly (see second diagram for an example):





drag left/right to affect:

- **x *pos***
- **x *size*** *(left to decrease, right to increase)*
- **x *spin***

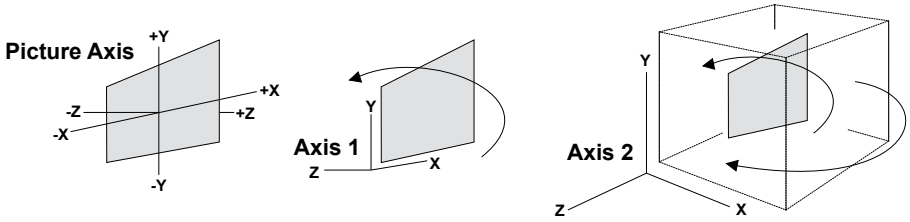
drag up/down to affect:

- **y *pos***
- **y *size*** *(up to decrease, down to increase)*
- **y *spin***

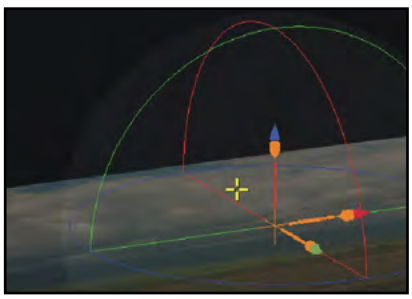
drag left/right/up/down to affect:

- **x and y *pos***
- **z *pos***
- **z *size***
- **z *spin***

After a spin has been applied, dragging an X, Y or Z control now affects all X, Y or Z values (as the image is no longer positioned exactly on a horizontal or vertical plane in 2D).



The picture axis is 'attached' to the centre of the image unless the **axis only** box is ticked (**axis only** allows the cursor to move to an image edge, for example, then spin the image from this point on the edge). The three individual axes (X, Y, Z) of this control axis specify the positive X (red), Y (green) and Z (blue) directions of the picture and axis with respect to space defined by axis 1.



Select **pic, axis 1** or **axis 2** followed by **spin**, and the arc cursors display. Press and drag on any of the arcs representing each axis.

The grey outline around the arcs can be dragged to rotate the image while maintaining the axes' relative position.

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Crop Menu

The **crop** menu allows the edges of the image to be cropped:

left the green numeric **left** box controls the amount of crop applied to the left edge of the image.

right the green numeric **right** box controls the amount of crop applied to the right edge of the image.

top the green numeric **top** box controls the amount of crop applied to the top edge of the image.

bottom the green numeric **bottom** box controls the amount of crop applied to the bottom edge of the image.

softness the green numeric **softness** box controls the softness applied to the cropped edges.

global the green numeric **global** box allows a crop to be applied to all edges at the same time.

centre the **centre** box re-centres a cropped image.

Flip Menu

The **vertical** and **horizontal** boxes flip (mirror) the image vertically or horizontally.

Pins Menu

The **dve – pins** menu allows the corners of an image to be repositioned anywhere in 3D space; the image is then automatically transformed to the new aspect.

Hover the cursor over the image area, four blue pins display in each corner of the image and four pins in the centre on each side. Press and drag any pin to a new position and the image updates accordingly.

The menu displays corresponding pairs of green numeric boxes for each of the corner pins (ie **top left**, **bottom left**, **top right**, **bottom right**). Enter specific values here instead of dragging pins on the image.

The **pic** box allows the pins and image to be moved together.

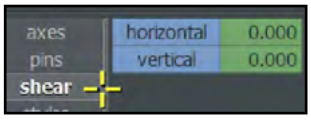
The **offset** box allows the pins to be moved without moving the image.

The **video** box allows the image to be moved without moving the pins.

The **fit crop** box fits the pins to the cropped image.

The **fit source** box fits the pins to the original image, even if it has been cropped.

Shear Menu



The green numeric boxes in the **dve – shear** menu allow the image to be skewed on the X and Y axis.

Styles Menu

When the **dve – styles** menu is selected, a choice of **frame, outline, emboss** and **shadow** is provided.

Where colour pots display, press <F2> on the keyboard to toggle the Colour Palette on/off enabling colours to be mixed and selected, then press on a pot to transfer the new colour to it.

With **frame** (ie border) selected, the following displays:

width controls the width of the resultant frame.

colour the pot determines the colour of the resultant frame.

With **outline** selected, the following displays:

width controls the width of the resultant outline.

softness controls the softness of the resultant outline.

outline the **colour** pot determines the colour of the resultant outline.

pic when ticked, this displays the video within the outline.

colour when ticked, this displays the area within the outline as a solid colour. The pot determines the colour.

With **emboss** selected, the following displays:

depth controls the depth of emboss on the image

direction controls the direction of emboss

colour the two pots determine the colour of the resultant embossed video.

With **shadow** selected, the following displays:

softness controls the softness of the resultant shadow.

strength controls the brightness of the shadow colour.

colour the pot determines the colour of the resultant shadow.

pos determines the position of the resultant shadow with respect to the video position.

spin determines the aspect of the resultant shadow with respect to that of the video.

size the green numeric boxes determine the size of the resultant shadow with respect to that of the video.

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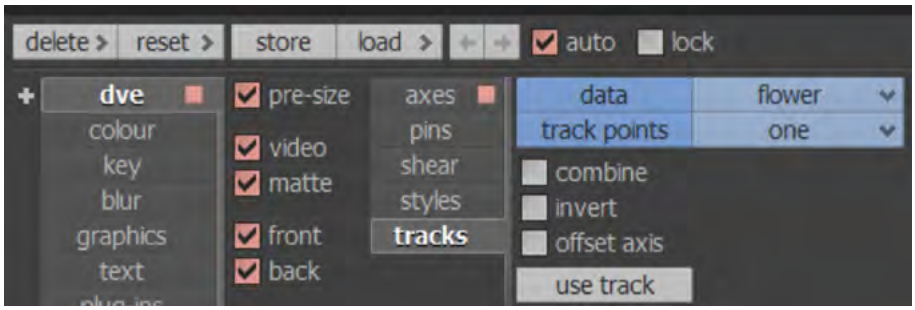
Tracks Menu

Use tracking data to create a new axes or pins effect, or apply it to an existing axes or pins effect.



See 'MLT FX Tracker Function User Guide' for details about how to set up tracking paths and apply them to the DVE processes.

Key Process

The **key** process has several functions including:

- cut-out or mask unwanted items using drawn graphic objects
- change colour of sampled colour ranges
- use text to cutout, or colour, an area

Cascade (Key Levels)

Press the **+** box to the left of **cascade 1** to create a new key-cascade level, then when finished, press **+** to commit this key and start a new key on **cascade 2.**

Keys can now be defined on each cascade level. Successive levels are combined to produce a composite key. To edit an existing cascade level, select it from the list (it highlights to indicate that it is current) then change the required key parameters.

Rename the cascades by clicking on the cascade name to change, eg **cascade 4**, and entering a new name using the hard or soft keyboard.

Press **delete** followed by the required cascade box to delete the selected level.

See the Grading User Guide for more details of using Cascades and keys, and to selectively change colour.

High Contrast View

Selecting the **K** box on the top-right of the menu area allows a hicon (high contrast) view of any type of key to be seen.

Reverse/Invert a Key

key reversed (eg desaturate other ranges except sky

In any of the key menus tick **reverse** (or **invert**) to reverse the key created by the sampled colour or vector object. This 'masks' the sampled colour range or vector object from subsequent changes, eg desaturation, while other colours/areas outside the key are affected.

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Method Menu

The **key – method** menu has the options of **chroma**, **chroma YUV**, **chroma HSL**, **linear** or **input key**, available from the blue scroll box on the right.

Chroma Key

With **chroma** selected, key colours can be sampled based on the current image's YUV/RGB values:

1 Press the **+** box then press with the cursor or draw a lasso (box) on the image colour range to change (eg over an area of blue sky). For the initial selection try and include mid-tone ranges and not extreme highlights/shadows of the range. The sampled colour range automatically increases to add a small range of different luminance levels above and below the sampled colour and hues either side.

key colour sample range (eg blue sky)

graded key range (eg desaturate sky)

Sampling a very small area may produce poor results if the sampled colour is grainy or poorly lit. Alternatively, sampling large areas may select colours outside the required colour range. Try using different lasso sizes and sample different areas to include the whole luminance range of key colour.

2 If required, use the **+** box to add more of the colour range to the initial sample, for example, to include more highlights or shadows. If too much is included, press the **-** box and draw a lasso over the unwanted range.

Components can also be adjusted by pressing values and entering numeric values in the low, high and soft boxes for each YUV component.

3 In the colour process, change the colour, which should affect only the sampled colour area, eg change the sky to grey by entering '0' in the **colour – primary – sat** box. Return to the key functions and if required, tick **reverse** to reverse the key created by the sampled colour (eg everything except the sky now turns grey).

4 There may be some spill around the edges of the sampled colour and inconsistencies in the density of the key produced. Press the **-** box then select ranges to be removed from the sample.

5 Change the **softness** value to soften the key edges if required.

6 If necessary, use the **+** and **-** boxes to accurately adjust the key range.

The keys from each sample combine to create the final key through which the colour correction is applied.

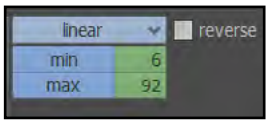
Chroma YUV Key

With **chroma YUV** selected, a key is created from the specified range of Y luminance, the specified range of U chrominance and the specified range of V chrominance:

Drawing a lasso and press the **+** and **-** boxes (follow steps **2** – **6** in 'Chroma Key' previously in this section).

Components can also be adjusted by entering numeric values in the **y, u** and **v** left and right **range** boxes to specify minimum/maximum colour ranges. To soften each component, enter minimum/maximum values in the left/right **softness** boxes.

Linear Key



With **linear** selected, create a key by selecting a key threshold range on the image:

Drag a lasso over the key colour required on the image. Adjust the following to eliminate spill and inconsistencies:

min controls the low threshold of the key; image information below this threshold is ignored.

max controls the high threshold of the key; image information between the **min** and **max** level is the key area.

It may be useful to start with a **min** value of 20 and a **max** value of 80, then make small increments until the required result is achieved. The input key inverts if the **max** value is less than the **min** value.

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Input Key

With **input** selected, specify the threshold range of the key so that the best area of a sloped edge input key can be selected.

Select the required low and high key colours on the image as follows:

low tick this box then select a 'low' colour reference from the image; this displays in the corresponding swatch pot.

high tick this box then select a 'high' colour reference from the image; this displays in the corresponding swatch pot.

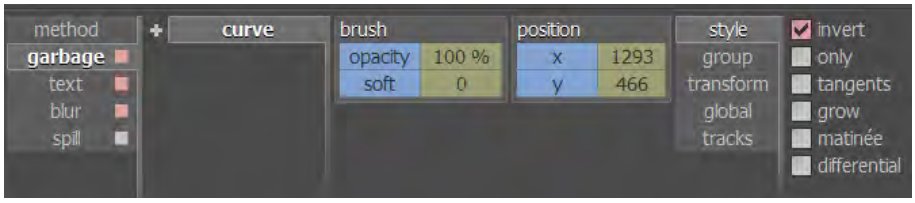
Adjust each colour by changing the **min** and **max** numeric values:

min controls the low threshold of the key; image information below this threshold is ignored.

max controls the high threshold of the key; image information between the **min** and **max** level is the key area.

The input key inverts if the **max** value is less than the **min** value.

Garbage Menu



The **key – garbage** menu allows drawn graphic objects to cut-out or mask unwanted items on foreground key layers (eg microphones, tracking markers, people, bags, etc).

The functions available in this menu are detailed in the 'Graphics Process' section.

See "Graphics Process" on page 3-16.

The **many** tick box allows the same type of graphic object (eg a square) to be drawn multiple times without repeatedly selecting it from the menu.

The **brush** menu allows the opacity of the shape over the image area to be set, and also the softness on the edges of the shape (ie it feathers the edges).

The **position/size** menu allows the object to be repositioned and sized numerically.

The menu on the right allows basic graphic objects to be manipulated into more complex shapes by combining or connecting them:

only Prevents other shapes being selected by mistake if they overlap each other.

grow Tick this and enter a value in the numeric box to shrink/grow the edges of the overall key (positive values grow the edges; negative values shrink the edges).

tangents Tick this to display tangents on the connected line/curve that emanate from each node point (when hovering the cursor over the shape). Drag the handle on the end of a tangent to modify the curve. A brown tangent affects the curve entering and exiting the node; a magenta tangent affects the curve entering the node; a red tangent affects the curve exiting the node.

differential Only displays with Stereo 3D media.

See 'Stereo 3D User Guide' for more information.

matinée The **matinée** function allows the edge of the key shape to be feathered (softened) and the level of feather adjusted on specific areas.

Draw a key shape then tick **matinée**. A matinée outline now displays over the existing shape outline. Depending on the shape, either enter a positive/negative value in the single numeric box (to grow/shrink the shape), or vertical and horizontal grow/shrink values in the two boxes. Keep the cursor positioned over the image area to provide a wireframe display of the two outlines.

Increase or decrease specific areas of the matinée effect by selecting a single node or lassoing multiple nodes on the matinée outline then dragging to a new position. This changes the level of feather between the shape and the matinée outlines. The matinée curve can also be modified using the **transform – curve properties** floating menu functions.

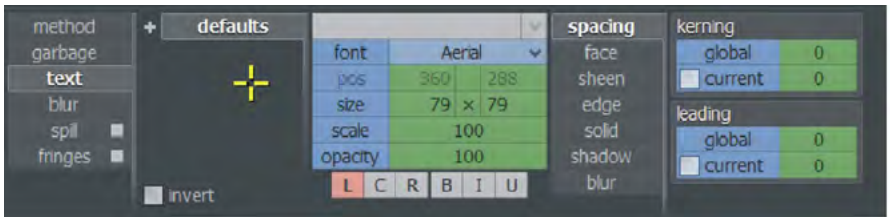
See "Curve Properties" on page 3-26.

If the original shape outline is modified, the matinée curve moves with it. If the matinée curve is modified, the original shape outline does not move.

With **line** or **curve** selected, a **tracks** box displays in the menu stack. This allows a tracking path with multiple points on it (unlimited points for a curve and four points for a line), that has been created in the **Tracker** menu, to be used.

See 'MLT FX Tracker Function User Guide' for more information.

Text Menu



The **key – text** menu allows text to be used as a key/cutout to expose video from underlying video tracks.

See "Text Process" on page 3-29.

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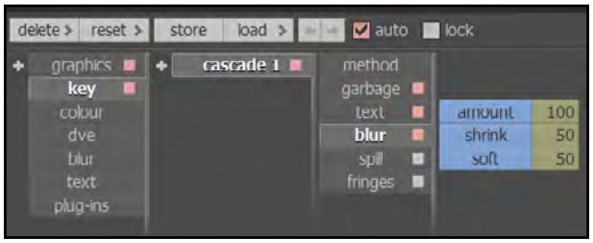
Blur Menu

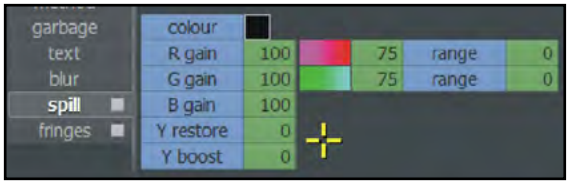


To blur any key type, press the **blur** box and adjust the numerical values in the in the **amount** numeric box to change the depth of blur.

Change the **shrink** value to grow or shrink the edges of the overall key (positive values grow the edges; negative values shrink the edges). Soften the edges of the key by changing the **soft** value.

See "Blur Process" on page 3-15.

Spill Menu



'Spill' is where the key colour has contaminated the required foreground elements.

The effects of colour spill can be neutralised from the **key – spill menu.**

The spill colour can be replaced by colour matching the rest of the foreground element.

The **key – spill** menu allows almost all of the key colour spill to be replaced by a neutral colour.

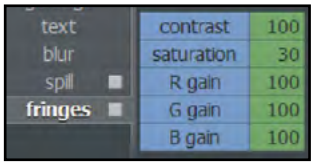
The colour pot transfers the colour from the original key that was pulled from the scroll box, eg **chroma**.

To adjust the value of the spill replacement colour, the **R gain**, **G gain** and **B gain** boxes allow the replacement colour to be defined using numeric values.

The values next to the two colour graduated boxes determine the amount of key colour spill to remove (in the spill area) from the primary colours in the foreground image. The **range** values determine the range of colour shades next to the chosen key colour that are also considered as spill.

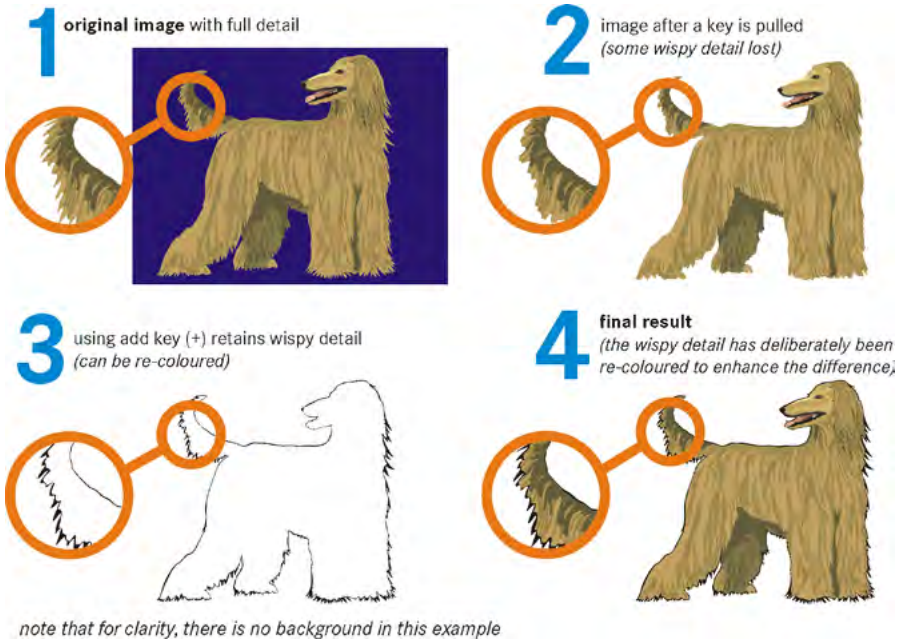
The **Y restore** and **Y boost** boxes allow the key edge slope to be adjusted to improve the definition of the spill component.

Fringes Menu



The **key – fringes** menu allows any fine detail lost due to the basic key process (for example wispy hair that had key colour spill on it) to display as a neutral grey edge around the key.

Select the **fringes** box and re-colour the fine details reintroduced by the add key function to match the foreground, eg matching the hair colour to the foreground.



note that for clarity, there is no background in this example

The **R gain**, **G gain** and **B gain** boxes allow the replacement colour to be defined using red, green and blue values. The **contrast** and **saturation** boxes allow the contrast and saturation of the replacement colour to be changed to match the foreground.

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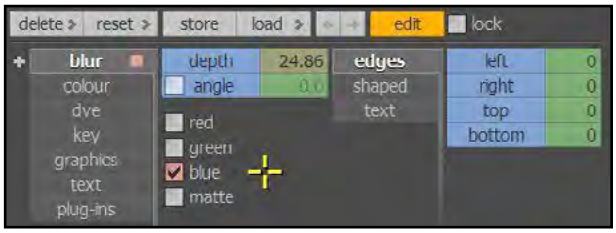
Blur Process



The **blur** menu allows a directional blur to be applied to each clip segment or video track.

The value in the green **depth** box controls the amount of blur to be applied to the selected clip segment or video track.

The value in the green **angle** box determines the angle of blur to be applied.

When a RBG clip or segment is loaded on the timeline, select colour channels using the tick boxes (**red**, **green**, or **blue**) to apply the blur process to individual colour channels.

With a YUV clip or segment, select **video** or **matte** to apply the blur to these components only.

Edges Menu

The **blur – edges** menu displays **top**, **bottom**, **left** and **right** numeric values that determine how far away from the edge of the image blur occurs and can be adjusted to remove artefacts that may occur with large amounts of directional blur.

Shaped Menu

The **blur – shaped** menu allows the image to be blurred through a graphic shape or through a group of combined graphic shapes; the functions available in this menu are detailed in the 'Graphics Process' section.

See "Graphics Process" on page 3-16.

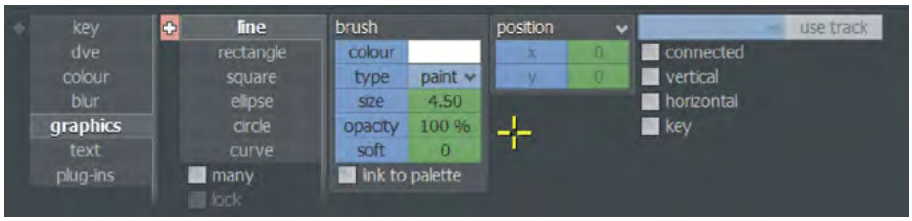
Text Menu

The **blur – text** menu allows the image to be blurred through a text shaped cut-out; the functions available in this menu are detailed in the Text Process menu.

See "Text Process" on page 3-29.

Graphics Process

The **graphics** process provides drawing tools for creating vector shapes (ie lines, rectangles, circles etc) that can be modified and keyframed in order to create dynamic (changing) shapes over the video tracks below.



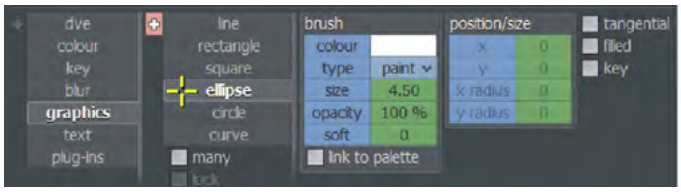
By default, graphic objects are drawn on the currently selected video track and when this video track is rendered the graphic objects are 'burnt' into the video. The **key** process (previously described) can be used to 'cut a hole' through the video track with the shape of the graphic objects and each object can add or remove areas to make complex keys.

If graphic objects are added to an empty video track or an empty segment of a video track, a clip segment is created for the graphics. This clip segment can be extended and have transitions such as dissolves and wipes applied.

Create Shapes

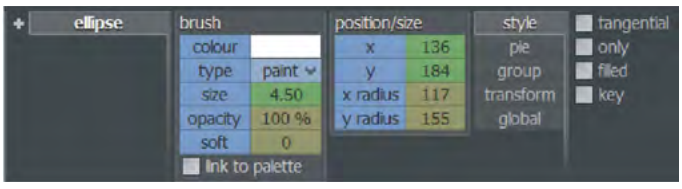
1. Select the video track and position to place the graphic on.

2. Select the required shape from the list, eg **ellipse**. The sub-menu displays to the right. The menu functions differ depending on the shape selected.



3. Draw on the image area by pressing the cursor to fix the first point of the object then move the cursor and press again to finish drawing.

4. When an object has been drawn, in this example an ellipse, it is automatically assigned the name **ellipse** displayed in the first column, and individual parameters display for it on the right (see following screen shot).



5. Overwrite this name by clicking on the name and entering a new one in the soft keyboard pop-up.

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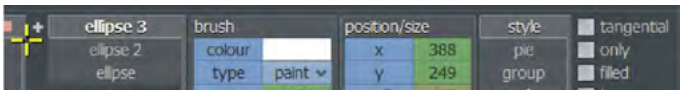


6 To draw another shape, press the **+** box on the left which toggles between the generic and individual (already created) shape stack. Select a generic shape, draw it and the individual shape stack now updates to include the new shape. The previous screen shot shows three ellipses in the stack. The orginal is named **ellipse**, whereas each subsequent ellipse is automatically incremented, eg **ellipse 2, ellipse 3** etc and is placed above the previous one. Rename the shapes if required (see step 5).

Modify a Shape

Modify each shape by pressing the **+** box on the left to toggle the individual shape stack on. Select the shape to change, eg **ellipse 3**, then modify the shape itself on screen or change the individual parameters on the right, eg **colour** and **opacity**.

Change a line or curve by dragging the nodes along it and either end of it to a new position. This can also be done on a shape, eg circle, but the shape must be transformed to a curve first.

Re-order Shapes

Any process menu that provides shapes (eg **graphics, blur, colour, key**) gives the option to pull forward or push back shapes by dragging the shape name box up or down the stack (eg drag **ellipse 2** and drop it above **ellipse 3**). The shape at the top of the list is placed in front of other shapes and the shape at the bottom is behind the others.

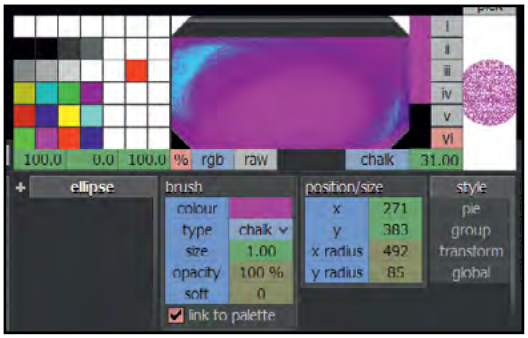
Pressing the + box toggles between the generic and individual (already created) shape stack.

Delete Shapes

Selecting the **reset** box followed by the **graphics** or shape name box resets the values back to their default, but leaves any keyframes in place. Selecting the **delete** box followed by the **graphics** or shape name box deletes all parameters for the currently selected clip segment or video track.

Brush Menu

Use the **brush** menu to set outline options for each graphic shape. Most values in this menu can be keyframed except brush type.



To set the brush colour:

1. Open the colour palette by pressing <F2>.
2. Press on a colour in the colour palette.
3. Press on the box to the right of **colour** in the **brush** menu.

This updates the colour of the brush to the colour selected in the colour palette. Use the **type** scroll box displaying **paint, air** (airbrush), **chalk** or **chair** (chalk+airbrush) to select the brush for the current shape.

Adjust **size**, **opacity** and **soft** by changing the values in the corresponding green boxes:

size Determines the brush size.

opacity Determines the brush transparency. A value of 100% is fully opaque and a value of 0% is fully transparent.

soft Determines how soft/blurred the brush edges display. A value of 0% indicates no blurring.

Brush options are applied to the currently selected shape and to any subsequently drawn shape.

Link the Palette to the Brush Menu

The **brush** menu can be linked to the colour palette so that any changes made in the palette are reflected in the **brush** menu. To link the palette tick **link to palette** in the **brush** menu. Brush options are applied to the currently selected shape and to any subsequently drawn shape. To break the link, deselect the **link to palette** tick box.

When the colour palette is linked, changing the values in the brush menu automatically updates the palette.

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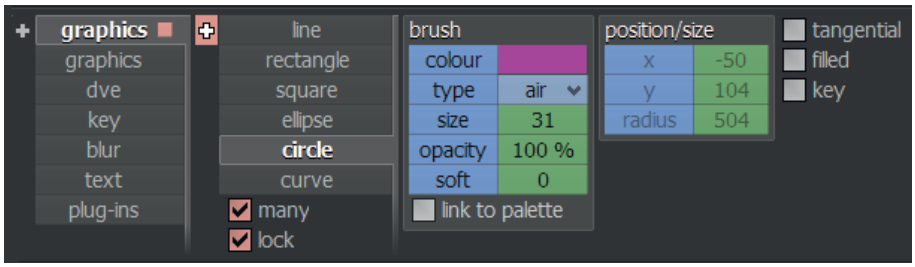
Many and Lock Functions

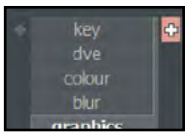


many The **many** box allows multiple shapes of the same type (eg **square**) to be drawn anywhere on the image area. These shapes increment in the stack list, eg **square 2, square 3** etc. It also allows parallel lines to be drawn (with **line** plus **horizontal** or **vertical** ticked).

lock The **lock** box can only be selected in conjunction with **many**; it allows shapes to be drawn inside/outside each other from one reference point, plus concentric shapes to be created (ie with the reference point in the centre of the shape). The first cursor press becomes the 'locked' start point for subsequent shapes. To finish drawing the 'locked' shapes, right-click with the cursor at the position of the final shape.

Some examples of shapes drawn with **many** and **lock** selected are shown in the following pages.

Style Menu



Before drawing a shape on the image area, choose styles for it by ticking the required boxes near the centre of the menu area. The options available before drawing include those in the **style** menu which then displays more options after the shape is drawn.

Options available depend on the shape selected from the list.

General Shapes

The following options can be applied to various shape types:

key makes a key from the shape so that it cuts through the video layer. Select **invert** to invert the key or **union** to form a key from a combination of shapes.

See "Key Shapes" on page 3-28.

only displays in the menu only after a shape is drawn, and prevents other shapes being selected by mistake if they overlay each other.

Lines and Curves

The following options display in either the **line** or **curve** menus. Modify a curve or line by dragging the nodes on the shape itself or the tangent handles:

use track with **line** or **curve** selected, a blue **use track** box displays. This allows a tracking path with multiple points on it (unlimited points for a curve and two points for a line) that has been created in the **Tracker** menu to be used.

See 'MLT FX Tracker Function User Guide' for more information.

connected joins subsequent lines together.

vertical snaps the subsequent line to the vertical axis.

horizontal snaps the subsequent line to the horizontal axis.

straight draws a 'curve' as a straight line.

closed the first and last node snap together to form a closed shape.

filled fills the curve with the current colour.

h zip restores clips with a horizontal scratch running through the image, or is used to remove wires or other unwanted items. Zip uses the data either side of the cursor position to close the defective area as the cursor is drageed cursor left/right. Use the **zoom** mode for accuracy.

v zip restores clips with a vertical scratch running through the image, or is used to remove wires or other unwanted items. Zip uses the data either side of the cursor position to close the defective area as the cursor is drageed cursor up/down. Use the **zoom** mode for accuracy.

tangents when a connected line or a curve is drawn, **tangents** displays handles on each node which allows the curve shape to be modified easily. Dragging any node affects the position of the node. Dragging the ends of the handles affects the angle/smoothness of the line emanating from the node.

properties the **curve properties** floating menu displays.

See "Transform Menu" on page 3-26.

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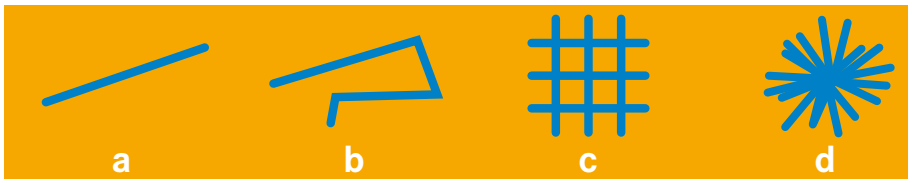
Examples (line)



The examples use the following **line** menu options:

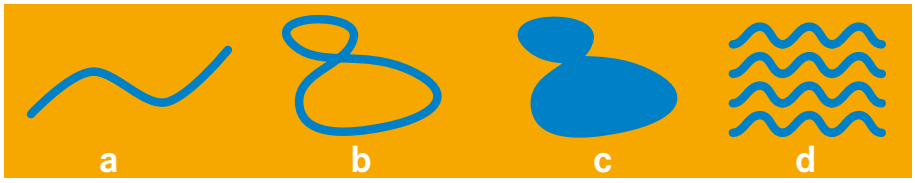
a with **line** selected, individual lines can be drawn by clicking on the image at the start position of the line, then moving to the end of the line and clicking again to finish the line.

b select **connected** before drawing to join subsequent lines together. Click on the image position to start the line, then click wherever a change in the line direction is required, and right-click (or press and lift the pen away) to finish the line.

c with **many** and **vertical** selected and the grid enabled (select **grid** then **x snap** and **y snap**), evenly spaced parallel lines can be drawn. Then select **horizontal** and draw across the vertical lines.

d with **many** and **lock** ticked, the first cursor press is used as a reference start point for all subsequent lines. This can be used to produce lines radiating from a central point. Right-click, or lift the pen away, to finish drawing.

Examples (curve)



The examples use the following **curve** menu options:

a with **curve** selected, a curve can be drawn by left clicking at the start position, then clicking again at each change of direction. Right-click, or lift the pen away, to finish drawing.

b with **closed** selected the curve ends back at the start position. Click for each change of direction then right-click, or lift the pen away, to finish drawing and complete the loop.

c the same options as **b**, but with **filled** also selected.

d with **many** selected and the grid enabled (select **grid** then **x snap** and **y snap**), draw evenly spaced curves by clicking on each grid marker then right-clicking to finish drawing each curve.

Straight lines can also be drawn with curve – straight selected.

Rectangles and Squares

The following options display in either the **rectangle** or **square** menus before or after drawing:

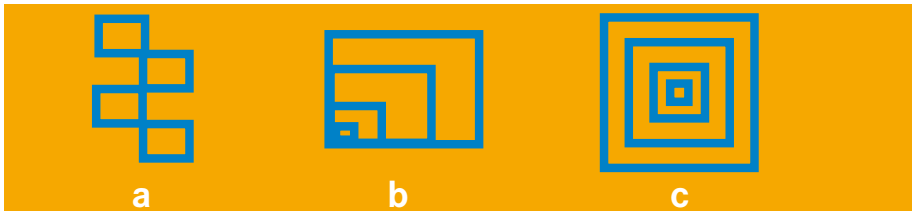
centred the cursor starting point now represents the centre of the rectangle instead of the corner.

gradient this provides four pots into which colours can be deposited from the palette. The shape fills with graduated colours from each corner. Use only two or three colours in the pots to create a simpler graduation.

filled fills the shape with the current menu colour.

solid fills the shape solidly with the current menu colour (brush type is retained with the shape, but not displayed unless **solid** is toggled off).

Examples



The examples use the following menu options:

a with **rectangle** and **many** selected and the grid enabled (select **grid** then **x snap** and **y snap**), draw aligned shapes by clicking on each grid marker, then clicking on the last marker to finish the shape on.

b with **many** and **lock** selected, the **rectangle** function is used to draw the original shape from the bottom-left (ie the reference point) to the top-right corner. Subsequent rectangles 'lock' to the bottom-left point.

c with **many, lock** and **centred** ticked, the **square** function is used to create concentric squares (**rectangle** can also be used). To get even spacing between concentric shapes, select **grid** then **x snap** and **y snap**.

Ellipses and Circles

The following options display in either the **circle** or **ellipse** menus before or after drawing:

tangential the first cursor press fixes the start of the circle/ellipse and the second cursor press defines both the size and the angle of ellipse (with **tangential** off, an ellipse is aligned to a horizontal or vertical axis).

filled fills the shape with the current menu colour.

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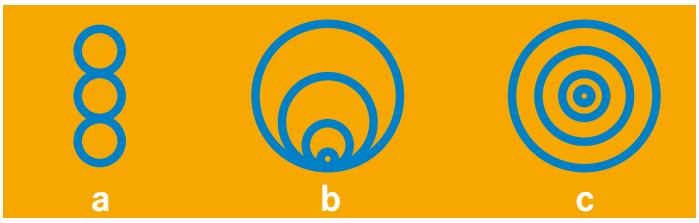
Examples (circle)



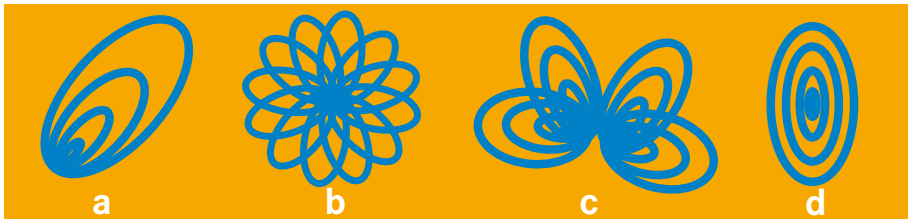
The examples use the following menu options:

a with **circle** and **many** selected and the grid enabled (select **grid** then **x snap** and **y snap**), draw aligned shapes by clicking on each grid marker then clicking on the marker to finish the shape on.

b with **many, lock** and **tangential** selected, the **circle** function can be used to click then draw upwards which locks the first cursor click as the reference point for subsequent shapes. Right-click, or lift the pen away, to finish drawing.

c with **many** and **lock** selected, the **circle** function is used to create concentric circles. To get even spacing between concentric shapes, select **grid** then **x snap** and **y snap**.

Examples (ellipse)



The examples use the following menu options:

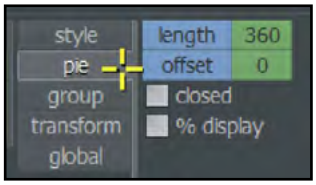
a with **many, lock** and **tangential** selected, the **ellipse** function can be used to click then draw out at an angle which locks the first cursor click as the reference point for subsequent shapes. Right-click, or lift the pen away, to finish drawing.

b The same options as **a**, but draw out at different angles to rotate subsequent shapes around a central point (ie the first cursor press).

c The same options as **a**, but right click to finish the first 'set' of ellipses then move to a different point and draw the next set.

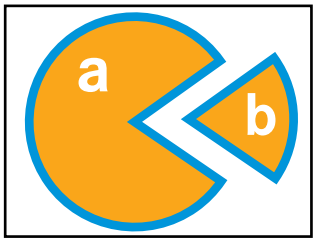
d with **many** and **lock** selected, the **ellipse** function can be used to create concentric horizontal or vertical ellipses (the latter in the example graphic). To get even spacing, select **grid** then **x snap** and **y snap**.

Pie Menu



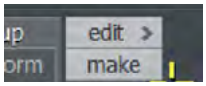
Circles and ellipses can be converted to a pie 'slice' by selecting the **pie** menu that displays after a shape is drawn.

The **length** value determines how much of the pie displays. By default the display is in degrees. Tick **% display** to view the length as a percentage.



The **offset** value determines where on the pie the gap is. The closed box closes the gap in the circle with either an indent (**a** in the diagram) or a slice (**b** in the diagram). This depends on the **length** value previously set.

Group Menu



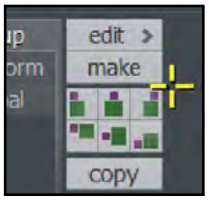
From the **group** menu, shapes can be grouped together by selecting them with a lasso (the shape names highlight to indicate those selected) and then pressing the **make** box.

The group can then be repositioned and re-sized as a single object. Each group is automatically given an incremental name (eg **group, group 2, group 3** etc) that can be changed by double-clicking on the name and entering a new one in the soft keyboard pop-up.

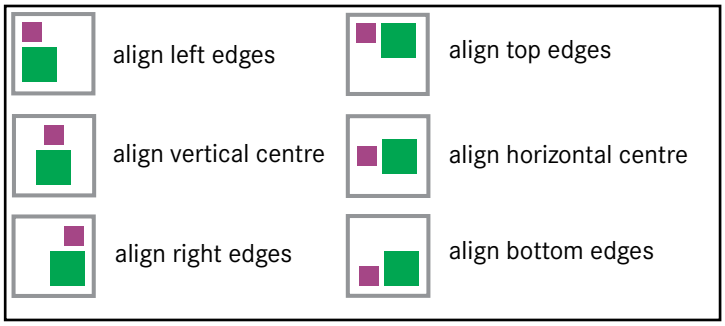
The currently selected group can be split back into individual shapes by pressing the **split** box. The shape list now updates accordingly. A group can have shapes removed from it by selecting **edit** and pressing on the shape to be removed from the group. Likewise, additional objects can be added to the group by pressing on them.

Grouped objects cannot be filled, re-coloured, blurred or have brushes changed.

Align Shapes



Drag a lasso around multiple shapes with the **group** menu selected, the **align** menu on the left displays.



Pressing one of these options aligns the selected shapes accordingly.

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Copy Shapes

The **group** menu **copy** box copies and pastes the selected shapes over the existing shapes. The new incremented names are added to the stack on the left.

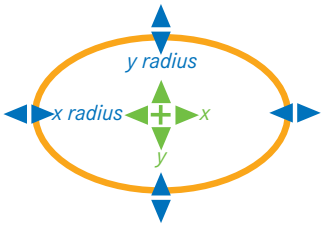
Position and Size Shapes

In most shape sub-menus (except the **transform** menu), reposition a shape manually on the image area by dragging it from its central axis point (indicated by the '+' cursor) to a new position. Similarly, re-size a shape by dragging its side, edge or corner point to the required size.

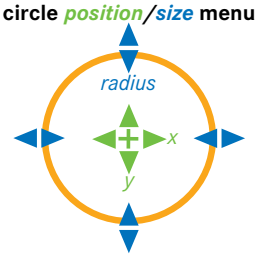
Position, Size, Corners, End Points Menu

As well as manually re-sizing or positioning a shape, use the **position/size** menu to enter numeric values. The options available depend on the shape. For rectangles and squares, the **corner** menu can also be toggled on by pressing the **position** menu's ⌄ arrow on the right and if a single line is drawn an **end points** menu becomes available by pressing the ⌄ arrow. See the following diagram for all position, size, corner and end point menu options.

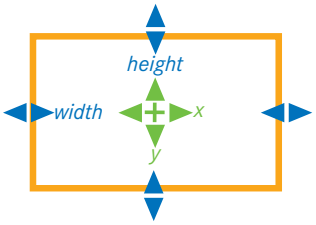
ellipse *position*/*size* menu



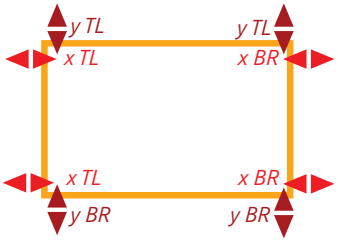
circle *position*/*size* menu



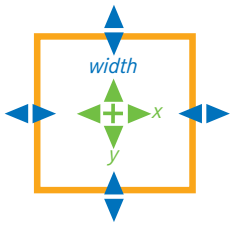
rectangle *position*/*size* menu



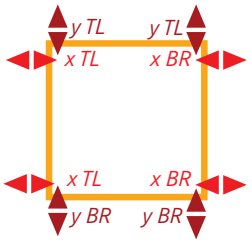
rectangle *corners* menu



square *position*/*size* menu

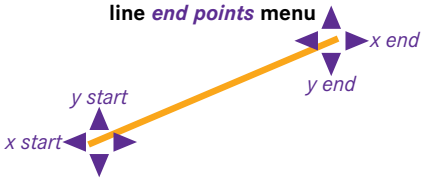


square *corners* menu



line/curve *position* menu

line *end points* menu



Transform Menu

The **transform** menu provides the following options. When this menu is active, manually reposition a shape by dragging on an area inside the shape:

x/y axis dragging the shape's **+** cursor or changing the values in the **x axis** and/or **y axis** boxes allow the shape's axis to be moved independently of the shape. For example, this allows the shape to be rotated around its corner instead of its centre.

angle rotates the shape around the x and y axis points; these points can be inside or outside of the shape.

scale scales the shape in relation to the x and y axis points.

mirror mirrors (reflects) the shape horizontally in relation to the x axis point.

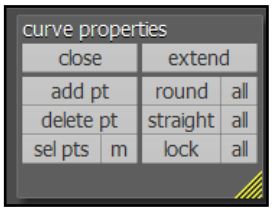
tumble mirrors (reflects) the shape vertically in relation to the y axis point.

to curve converts a basic shape such as a rectangle or circle into a curve.

Transform to Curves

When selecting **transform – to curve,** a basic shape such as a rectangle or circle is converted into a curve, indicated by the prefix 'cv' in the name field (eg **cv.rectangle**). For example, a circle or ellipse converted into a curve displays four nodes instead of one.

The basic shape can then be modified by moving the extra nodes/tangents that display, and more nodes can be added, resulting in a more complex shape. Tick **tangents** to see and modify the nodes.



The **transform – curve properties** floating menu displays when a curve or connected line is drawn or a shape has been converted to curves.

Move this menu, if required, by pressing on an empty area of the menu and dragging it to the required position. Left-click on the yellow triangle on the bottom-right to return it to the default position; right-click to toggle between current/default positions.

Curve Properties

The **curve properties** menu provides the following functions:

close Closes the current open curve.

add pt Press **add pt** then press on the curve to add a new point (node) at this position.

delete pt Press **delete pt** then press on the curve to delete this point. The curve automatically rejoins and adopts the properties of the nodes either side of the deleted one.

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sel pts/ edit sel Press **sel pts** (select points) then draw a lasso around nodes to select them. The selected nodes can then be moved together, locked, set to **straight** or set to **round**.
The **edit sel** (edit selection) box then displays to allow individual nodes in the current selection to be deselected or additional ones to be added.

(m) This only displays (next to **sel pts**) if **matinée** has been applied; it selects all the nodes on the matinée curve so that this can be moved/edited independently of the original outline.

See "Garbage Menu" on page 3-11.

extend Allows new nodes to be added to the 'finish' point of an existing curve or shape. Click to place the new nodes.

round/all If the **round** box is enabled after a connected line has been drawn (ie with straight lines between each node) then press on any node and the line in and out of this node becomes curved. If **all** is selected, all the points on the current curve are set to round.

straight/all If the **straight** box is enabled after a curve has been drawn (ie with curved lines between each node) press on any node and the line in and out of this node becomes straight. If **all** is selected, all the points on the current curve are set to straight.

lock/all If the **lock** box is enabled after a curve or shape has been drawn, press on any node and it is fixed in its current position. If **all** is selected, all nodes on the current curve are fixed in their current positions.

A basic shape (eg circle) cannot be converted back into its original form after it has been converted to curves.

Tick Shapes Preview in the <F1> Configuration Window's UI menu to see a wireframe preview of the shape as it is dragged over the image area.

Global Menu

Softness/Blur

In the **global** menu, a **softness** value can be entered. This softens/blurs all shapes at the same time, with higher values making the shapes more blurred than lower values.

Save and Reuse Shapes

Settings Bin – Graphics

Graphic shapes (with or without a key) can be saved in the Settings Bin and then dragged into the image area in the **graphics, blur, colour** or **key** menus. Saved shapes in the Settings Bin are categorised **Graphics** in the blue scroll box at the bottom of the bin. The **selection** box at the bottom of the bin can be used as follows before pressing **save** and entering a name in the pop-up:

selection OFF all shapes on the current layer are saved. If previously saved shapes are dropped back into the **graphics** image area, any currently displayed shapes are deleted and replaced with those in the Settings Bin.

selection ON only the currently selected shapes (ie a temporary group created with a lasso) are saved. If previously saved shapes are dropped back into the **graphics** image area, those in the Settings Bin are placed over any existing shapes.

Settings Bin shapes display in the image area on the currently selected layer as a video object (with a key channel, if one was saved with it).

See “Key Shapes” on page 3-28.

Key Shapes

A key can be created from a shape by ticking **key** in the **graphics** menu.

If a Settings Bin key shape is dragged into the image area in either the **colour** or **blur** menus, the video channel from the shape is used as well as the key channel which enables the **shaped** function. In the **shaped** menu, press **convert shapes** to add the shapes individually to the stack.

If a Settings Bin key shape is dragged into the image area in the **key** menu, the **garbage** function enables. Press **convert shapes** to add the shapes individually to the stack.

Tick the key box in the graphics menu, and select invert to invert/ reverse the key area, or union to form a key from a combination of shapes.

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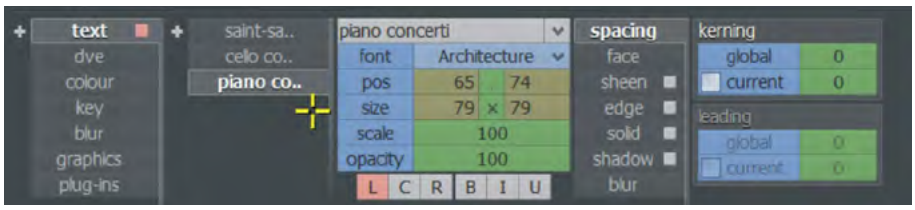
Text Process

Text can be applied to a video track (with or without video) where it has both a video and key component. The size, position and colour of the text can be keyframed.



If text is applied to an empty video track or an empty segment of a video track, a clip segment is created to hold the text. This clip segment can be extended and have transitions applied (eg dissolves and wipes).

Load Fonts

Windows Fonts

The fonts used by the Quantel kernel are True Type and are installed in the C:\Windows\Fonts folder. These fonts display in the Quantel Fonts Bin on the Application Bar.

Fonts Bin

Fonts can be loaded into the **text** process' scroll list by opening the Fonts Bin from the Application Bar, then selecting and dragging them from the bin and dropping them on the scroll box.

Up to 20 fonts can be held in this list. To delete fonts no longer required, press on the yellow x at the top right of the font name. The currently active font cannot be deleted.

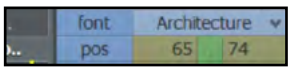
A browse display of each font can be selected in the Fonts Bin. The yellow symbol in the top left corner of the open bin toggles between titles and browse display.

See 'Workstation & Seat - Setup & Admin Guide' for how to install Windows fonts.

Users are responsible for ensuring that they have the appropriate rights to install and use specific typefaces and fonts.

Create Text

1 Select the **text** process from the left of the menu area followed by the video track and position for the text placed over.



2 Select the font to use from the **font** scroll box.

3 Press the **+** box ('add new text') to add text.

4 On the image area, press to start the text. A box displays. This is the 'container' for the text and it re-sizes as text is entered.

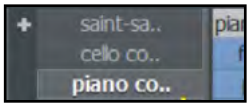
5 Type the required text. A single character, word, line or multiple lines can be entered.

See "Add New Text Lines and Boxes" on page 3-31.

The text name (in the stack to the right of the **+** box), and the text entry field next to this, update as text is entered. Text can also be entered using this entry field.

Edit Text

Select Fonts



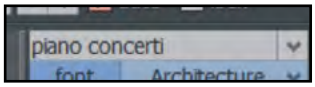
Select the font to use from the **font** scroll box.

Select Text Boxes

After a number of text objects have been created, select one by pressing the required name in the stack next to the **+** box. Alternatively, press on the text on the image area to select it; the stack name box highlights accordingly.

Change the font, re-size or reposition the text and add colour styles using the settings in the **text** menu.

Select Characters and Words



Select characters and words in the current text box by clicking in the text entry field (shown on the left) then dragging over the characters to change.

A highlight displays in the text entry field and the image area. Re-type, style or delete this highlighted text while leaving the remaining text in the box unaffected.

Any styling changes to selected parts of a text object are not keyframeable.

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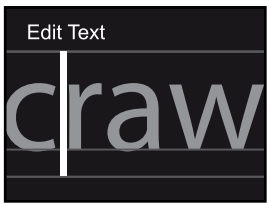
Add Characters



The 'I' cursor displays when clicking between two text characters on the image area. Use this cursor as an insert point to then type more characters which are inserted at this position. This can also be done by clicking in the text entry field in the menu area then typing.

Add New Text Lines and Boxes

Press <Return> to create a new line within the same text box. Press <Ctrl> + <Return> to create a new independent text box under the original (the stack on the left of the menu area updates accordingly).

Delete Text Boxes and Characters

To delete a text object (ie contained in a box), select the text on the image area or select it in the name stack. Now press **delete** in the top-left of the menu area.

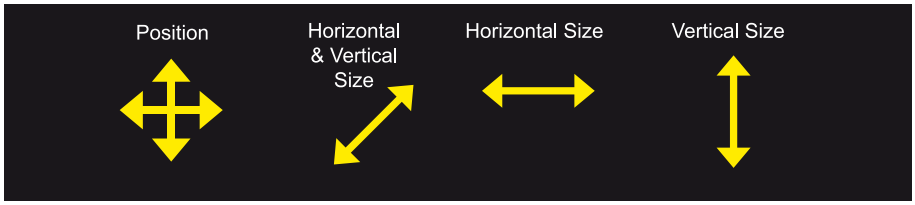
The 'I' cursor displays when clicking in between text characters on the image area. Press <Delete> on the keyboard to delete the character to the right. Press <Backspace> to delete the character on the left.

Save Text

Text objects with parameters can be saved in the Settings Bin with the category **Text** and then reused as required.

Position and Size Text

Position or size text manually by hovering one of the yellow cursors over the text box then dragging. The cursor that displays depends on the position when hovering over the text box (inside the text box, on a corner or on an edge). These cursors provide the following functionality:



Alternatively, use the following menu options to position or size text:

pos the two green **pos** boxes control the horizontal and vertical position of the current text object in the image area.

size the two green **size** boxes control the character width and height of the current text object (not the font size) in the image area.

scale the **scale** box determines the X and Y scale based on a percentage of the text object size value.

Text Opacity

opacity this affects the transparency of the text colour (a value of 0 is transparent).

Alignment

L, C, R Boxes

The **L**, **C** and **R** boxes control the horizontal alignment of text (left, centre and right). The **grid** function can also be used to align text.

Font Style

B, I, U Boxes

Select the **B** box to make the current text **bold**.

Select the **I** box to make the current text *italic*.

Select the **U** box to make the current text underlined.

Select one or a combination of the above, as required.

Spacing Menu

Kerning and Leading

The **kerning** menu affects horizontal spacing between characters:

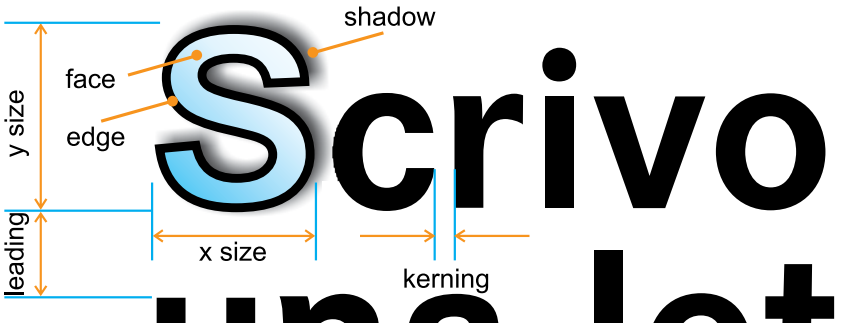
the value in the green **global** box affects the kerning between all characters in the current text box.

the value in the green **current** box affects the kerning of the currently selected character (ie at the cursor position). Tick the box to manually drag the space using the 'I' cursor in the text box.

The **leading** menu affects vertical line spacing:

the value in the green **global** box affects all the line spacing in the current text box.

the value in the green **current** box affects the line spacing of the currently selected line (ie at the cursor position). Tick the box to manually drag the space using the 'I' cursor in the text box.



Baseline Shift

The baseline of the selected text can be altered relative to adjacent text by entering a number in the green numeric box. A positive number moves the selected text downwards, whereas a negative value raises it above the baseline of the adjacent text.

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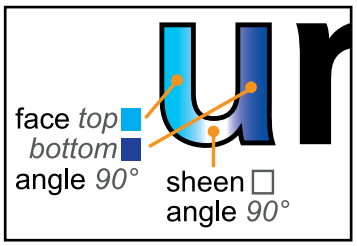
Face Menu

The **face** menu allows the fill colour of the text to be set as a single colour, a two-colour gradient or a four-colour gradient; select **one, two** or **four** from the **colours** scroll box. Transfer colours from the Colour Palette to the colour pots that display; toggle the palette on/off by pressing <F2> on the keyboard.

With **two** selected, choose the ratio of the two colours by changing the **top** and **bottom** values then define an **angle** to rotate the colours (but not the text).

The green **opacity** box defines the transparency of the text (100% is fully opaque and 0% is fully transparent).

Sheen Menu



The **sheen** menu allows a coloured highlight to be applied to the face of the text.

Transfer a highlight colour (the default is white) from the colour palette to the **colour** pot then specify the **size** and **opacity** of the highlight within the text.

The **distance** value controls the highlight's distance from the text edge and the **angle** value controls the rotation of the highlight (but not the text).

Edge Menu

The **edge** menu allows a coloured outline to be applied to text characters. The **size** box controls the thickness of the outline and the **colour** pot defines the outline colour. The **opacity** value controls how transparent the outline is.

Solid Menu

The **solid** menu adds an extruded 3D effect behind the text face. The **size** box defines the depth of the extrusion and the **angle** box defines its angle from the face. The **colour** pot defines the colour of the extrusion.

Shadow Menu

The **shadow** menu creates a shadow behind the text. The **distance** box defines the distance it is positioned from the text; **opacity** defines the shadow's transparency; **angle** defines the shadow's offset position from the text and the **softness** box defines the blur/feathering of the shadow. Enter a **size** value to make the shadow larger or smaller and use the **colour** pot to change the shadow colour.

Blur Menu

The **blur** menu can be used to give either a **vertical** blur on the whole text object, or a **chroma** blur affecting the face colours of the text.

Plug-ins Process

Important Notice

Only V4.2 plug-ins are compatible with V5.0 software. V4.1 plug-ins ARE NOT compatible; new versions of plug-ins are required BEFORE UPGRADING. Providers are aware of this issue and have provided any support required to enable compatible versions to be produced. Quantel are not responsible for the availability of specific plug-ins.

Plug-ins are accessible for video tracks and video segments within MLT FX. Select a clip segment or video track, then select the **plug-ins** box on the left of the **mlt fx** menu area.

The blue **-off-** scroll box on the left allows the plug-in provider to be selected. For example, Select **Quantel**, and a **select:** scroll box displays below allowing a choice of plug-in from the list. The menu now displays the functions and options for this plug-in.

The main (first) clip to be processed by the plug-in is the currently selected clip segment or video track. If the plug-in requires an additional (second) clip, drag and drop it onto the '**no clip selected**' box; this now displays the name of the loaded clip.

The currently selected plug-in with parameters can be added to a 'holding' area by selecting **favourites** then holding down the cursor over an empty grey box. Select existing plug-ins by pressing **favourites** followed by the box holding the plug-in name. Any existing favourite can be removed by pressing the **delete** box followed by the plug-in to remove.

Plug-in parameters can be saved into the Settings Bin if required. The plug-in process can be disabled by scrolling the plug-in provider box to **-off-**.

See the 'Utilities & Plug-ins Guide' for details of Quantel Plug-ins.

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Appendix

About This Manual

This guide covers software available on some Quantel stand-alone and server-connected systems. It may cover functions or options not available on the system you are using.

This guide was written and published by Quantel. The bottom of each page displays the guide's reference number, eg **2140-57-xxx** plus a revision letter, eg **B** (B being more recent than A which is the original). The publish date is also indicated in the format **mm/yy**. If you require hard copies of this guide, always quote the reference number, revision letter and title.

2140-57-006 revision	**publish date**	*ECO (Quantel use only)*	**software version**
A	**12/10**	**E44082**	**V5.0**
B	**11/12**	**E44770**	**V5.2**
C	**09/14**	**E45393**	**V5.3**

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Notices

Maintenance

WARNING (WM2) SERVICE PERSONNEL – MAINTENANCE AND CALIBRATION WITHIN THE EQUIPMENT ENCLOSURE IS ONLY TO BE CARRIED OUT BY SERVICE PERSONNEL (12/97)

Conventions Used

Symbols

See: Reference to items in other documents.

Notes: System, software and workflow points to consider and remember.

Tips: Useful hints and advice when undertaking tasks.

Cautions: Indicate possible damage to (or misalignment of) the equipment if the indicated statements are ignored or the indicated procedures are not followed correctly.

WARNINGS: INDICATE DANGER TO LIFE AND LIMB IF THE INDICATED STATEMENTS ARE IGNORED, OR THE INDICATED PROCEDURES ARE NOT FOLLOWED CORRECTLY.

Text

<Text> indicates a specific key press on the QWERTY keyboard.

NN/nn indicates a value entered on a numeric keypad.

Text/text indicates either a Quantel application menu function or a Windows/ Quantel installation/system setting.

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Appendix

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